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TEXTILE Manufacturing WORLD

GUILD & LORD, Publishers, 620 Atlantic Ave. BOSTON, MASS., U. S. A., FEBRUARY, 1894. ONE DOLLAR PER YEAR, POSTAGE PAID. Vol. VII., No. 2.

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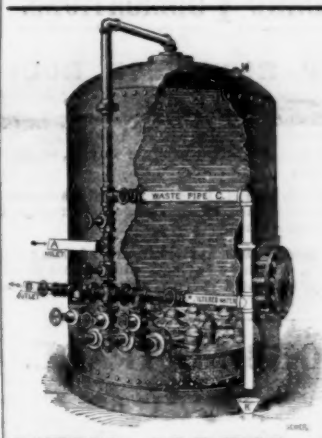

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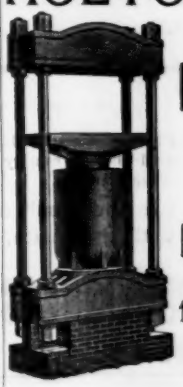
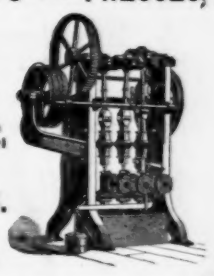

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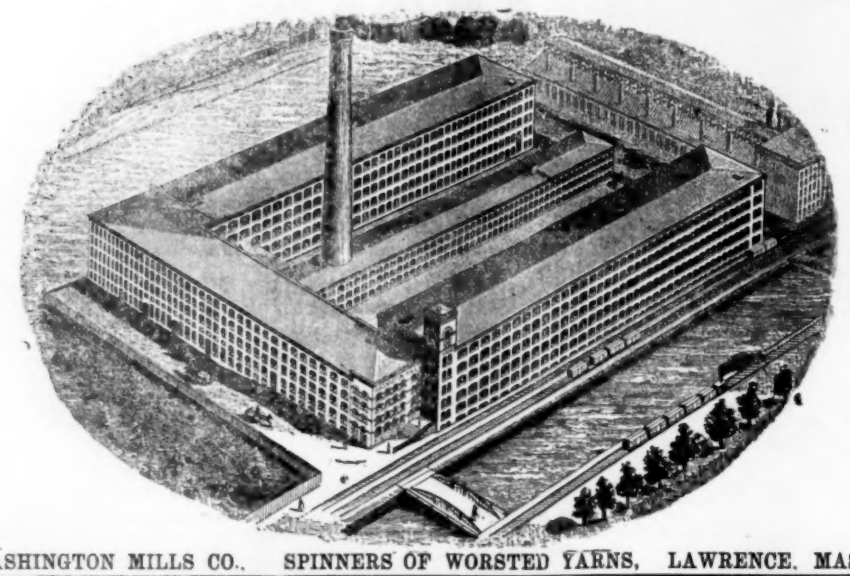

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J. D. SHELDON & CO., PUBLISHERS,

54 & 56 Franklin Street, New York.

—John Gallen, for the past 11 years overseer of carding in the Union Knitting Mill, Hudson, N. Y., has resigned, and will start up in business at that place.

—Miss McLellan has resigned as forewoman in Newland's Knitting Mill, Stillwater, N. Y.

—Anthony O'Malley, who resigned his position in the Davol Mill to accept a similar one in the Hargraves Mill, Fall River, Mass., as overseer of carding, was presented with a marble clock, a gift of the Hargrave's operatives.

—Robert Hahnel, of Toledo, Ohio, has accepted a position as overseer of knitting with Max Lowenthal, Rochester, N. Y.

Removals.

The American Supply Co., Providence, dealers in all kinds of mill supplies, from the smallest item to entire mill outfit, are removing to new offices at 11 and 13 Eddy Street.

C. R. English, tanner of roller and wool skins for clearers, etc., and dealer in roller, clearer and slasher cloths, has removed from 216 Purchase Street to 184 Summer Street, Boston.

THE TEXTILE MFG. WORLD

A MONTHLY JOURNAL
Devoted to the Development of the Textile Manufacturing Industries of North America.

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CORRESPONDENCE.

Communications intended for the Editor should be addressed to 620 Atlantic Ave., Boston, except those for the Colors and Dyeing Dept., which should be sent to 240 Chestnut St., Philadelphia.

DATE OF PUBLICATION.

The paper is published about the 15th of each month. Matter for the technical departments should be received before the 8th. News items, personals, wants, and "For Sale" ads. can usually be taken up to the 10th.

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"Textile Mfg. World, monthly, Boston, has the largest circulation rating accorded by the American Newspaper Directory to any paper in the United States published in the interests of the textile manufacturing industries and allied interests."

Features of Special Interest.

This issue contains several features of more than ordinary interest.

On pages 10 and 11 will be found the Tarrif Schedules of 1883, 1890, and the Wilson Schedule as it passed the House of Representatives.

On page 14 will be found Chairman Voorhees' questions to manufacturers, for the benefit of the Finance Committee of the Senate.

In the Woolen Department there is the beginning of an interesting series of articles on "Satinet Printing," a branch of the textile industry of which comparatively little is known. There is also a valuable Fuller's Shrinkage Table on page 18.

In the Cotton Department is the first of several letters on Gingham Manufacture, by an expert. The other departments have not been neglected, and are filled with valuable material.

When it is realized that the reading matter, not including advertising, in every issue of the TEXTILE WORLD (set in same type), equals over 100 pages of such magazines as Harper's, Century, etc., or equivalent to a volume of 1200 to 1500 pages of that size each year, it cannot be denied that the publishers are giving good value for the $1.00 which is charged for a years' subscription.

It is a pleasure to state that even in the face of the hard times we are constantly forging ahead, and the very large proportion of our old subscribers who renew, and the steady addition of new subscribers to the list, proves our efforts to make a good textile paper are appreciated.

The Status of the Tariff Bill.

The most important event in the past month has been the passage of the Wilson Tariff Bill by the House of Representatives, in substantially the same form as it was reported to the House from the Ways and Means Committee. Some slight changes were made in the textile schedules. The most important modification was the amendment fixing the date of August 1st as the time on and after which wool should be entered free, in accordance with the provision of the bill, and December 2 as a time when the schedule for manufactured woolen goods should take effect.

It had been supposed by very many conservative people in both parties that the Income Tax provisions of the bill would have had the effect of cutting down the majority on the final vote far more than proved to be the case. Although the opposition to the Income Tax was very strong in certain sections of the Democratic side of the House, yet when the party whip was cracked, the balky Eastern representatives fell into the line with their Southern and Western brethren, and rolled up a larger majority than had been anticipated. This at once gives rise to the question as to whether the crack of the whip in the Senate will have a similar effect.

The bill is now in the hands of the Finance Committee of the Senate, which has appointed a sub-committee to do the preliminary work. Contrary to the promise made by the chairman of the committee, the Democratic majority has decided that no public hearings will be held, so that the manufacturers and working people will have no further opportunity to speak in their own defence.

Recent rumors from Washington are to the effect that the Finance Committee of the Senate will so remodel the House bill that it will hardly be recognized, and the most important change that has been suggested as likely to occur is that which changes the entire composition of the bill in regard to classification. For many years all tariff bills have been divided into different schedules according to the character of the goods enumerated. Thus there was a metal schedule, a cotton schedule, a woolen schedule, etc.

If the plan which has been mentioned is adopted, the classification will be according to the rate of duty. Thus all articles which pay a duty of 20 per cent. will appear in the same schedule, whether metal, chemical, cotton or woolen goods. All articles which pay 30 per cent. will appear in the 30 per cent schedule. We confess we cannot see the slightest advantage in such a classification which would be only another obnoxious feature to this already abominable bill.

Other rumors have been to the effect that the Senate committee would adhere closely to the principle laid down in the Democratic platform of the tariff for revenue only, and that they propose to raise sufficient revenue for the government by the imposition of the duty from all articles most likely to bring large sums, and wool has been mentioned as among the articles which the Wilson Bill put on the free list, which would be put back again upon the dutiable list. A duty on wool, without a corresponding change in the duty on manufactured goods, would be the last straw to break the back of the woolen manufacturing business.

No two men who have been to Washington, nor any two Washington correspondents, seem to agree in their opinion as to the ultimate fate of the bill in the Senate. In conversation with a prominent Boston banker, who had made a special trip to Washington for the purpose of finding out "how the land lay," as well as he could, and who had had conversation with different members of the Finance Committee, he assured us that the bill would unquestionably be defeated, unless it was so thoroughly remodelled as to make an entirely different thing of it. On the other hand, a prominent builder of cotton machinery, who has also been to Washington (though not in official capacity), feels satisfied that the bill will pass the Senate.

In all probability no vote in the Senate will be reached before the middle of April, if so soon.

The Fire Loss in Textile Mills in 1893.

One hundred and twenty-two fires in textile establishments were reported during 1893, where the loss was $1000 and upwards. The total damage done amounted to $3,830,300 and was sustained by 132 different concerns. The insurance carried, as nearly as we can estimate it conservatively, aggregated $2,510,600 and was 65.5 per cent. of the losses.

One hundred and three of the 132 firms concerned carried insurance.

FIRE LOSSES IN TEXTILE MILLS, 1893, IN THOUSANDS OF DOLLARS.

WOOLEN.		COTTON.	
Greatest 225.		Greatest 200.	
3	between 100 and 150	5	between 100 and 150
8	" 75 " 100	7	" 40 " 75
6	" 30 " 50	4	" 5 " 10
11	" 10 " 25	2	" 1 " 2
2	" 5 " 10	KNIT.	
3	" 3 " 5	Greatest 70.	
15	" 1 " 3	7	between 10 and 25
SHODDY, WASTE, ETC.		17	" 1 " 3
2	about 40	DYEING & FINISHING.	
3	" 20	Greatest 50.	
5	under 5	3	between 11 and 20
SILK.		4	" 1 " 3
1	about 100	JUTE, FLAX, ETC.	
1	" 5	1	about 75
1	" 3	1	" 17
OTHER MISC. MILLS.		1	" 10
1	about 20	2	over 1
1	" 10		

Average Loss per fire	about	$29,017
" " Cotton Mills	"	31,536
" " Woolen "	"	34,659
" " Knitting "	"	8,720

In the woolen industry the total loss was heaviest and amounted to $1,697,200. The number of fires in woolen mills was also greater than the number in any other branch of textile manufacture, there being 49 fires in woolen as compared with 23 in cotton, 25 in knitting, and 25 in all other classes of textile mills.

The insurance carried by the woolen mills concerned aggregated $684,500 and was held by 43 firms. It was 64.6 per cent. of the loss.

Twenty-three of the plants were fully insured; 20 partially, and the remaining 9 carried none.

The fires in woolen establishments with regard to location, were distributed as follows: Pennsylvania 10; Massachusetts 9; Rhode Island 4; Connecticut 4; Maine 4; 2 each in Indiana, New York, Maryland, Minnesota, Wisconsin, Ohio, Montana; and one each in Kentucky, Virginia, Illinois, New Hampshire, and California.

Twenty-three fires were reported in cotton mills, and 24 separate firms were concerned. The total loss amounted to $1,236,500 and the insurance was $942,500 or 76 per cent of the loss.

Our figures show that the cotton manufactures insure more heavily than do the others. We find that of the 24 concerns suffering losses, 15 were fully insured; and 6 for more than half or a large part.

In point of location the cotton mill fires took place as follows: 7 in Massachusetts; 3 in Pennsylvania; 3 in North Carolina; 2 in New Hampshire; and 1 in each of the following states Connecticut, Maine, South Carolina, Georgia, Texas, New York and Virginia.

Next in point of loss, though second in number of fires, are the knitting mills. The total number of fires were 25; loss $218,000; insured for $117,000, or a little over 53 per cent.

This class of mills seems to suffer considerably from fires of slight extent, but since they are not generally liable to *great* losses, they do not seem to carry a heavy insurance. Eleven concerns were fully insured, 6 partially, and 8 carried none. The mills where the fires occurred were located as follows: New York, 12; New Jersey, 5; Pennsylvania, 2; New Hampshire, 2; 1 each in Massachusetts, Wisconsin, Virginia and Alabama.

Ten shoddy plants suffered losses by fire last year and with but few exceptions each was completely wiped out. The total loss was $158,600; insurance $98,000 or a little over 49 per cent. Only 5 of the plants carried insuaance, 3 for the full amount and two for about 1-2.

Eight fires occurred in dyeing and finishing plants which were independent of any connection with any other kind of mill.

The total loss was about $112,000. The insurance, which is generally below 1-2, amounted to $53,000 or a little over 47 per cent. of the loss. These establishments were located in Pennsylvania, 5; Rhode Island, 2; and Maryland 1.

Three fires were reported in silk mills. One was a silk throwing plant in New York state where the loss was $100,000, the insurance upon which was, we understand, $50,000. The other two were small plants and the loss amounted in one case to abont $5,000 and in the other about $2,000.

We reported one fire in a flax mill in New York state where the loss was about $65,000, and the insurance, we understand $35,000. One jute bagging company suffered to the extent of $10,000 on which there was some insurance, and two other jute maufacturing plants suffered small losses, which were covered by insurance.

Our list includes also two fires (three separate plants) not specially enumerated, which occurred in Philadelphia, where the lines manufactured were glazed threads, chenille goods and upholstery trimmings. The total loss in these three establishments was about $30,000. and the insurance was estimated at $18,000.

LOCATION.

Twenty-one of all the fires occurred in Philadelphia or within the fire districts of some one or other of its large suburbs, 5 in Fall River; 3 in Providence and 4 in Cohoes; and 28 in other cities or towns where the means for fighting fire should be the best.

In all, we might classify 61, or exactly 1-2 of the fires in cities, and with this classification the figures show that the average loss occasioned by fire in textile establishments in cities was about $22,-444. In 1893 the fires in towns or isolated districts was also 61 in number and by averaging in the same manner as above we find an average loss of $37,-065.

For the first six months of the year we reported a total of 72 fires, 36 of which were classified as occurring in cities. In making the averages then it was found that the losses in cities were $20,-264 and in isolated districts $29,877.

WHERE THE FIRES START.

The origin of the fires has not been very often reported, so that our information on this point is not as complete as we would wish.

In woolen mills where the origin of the fire was mentioned at all in our reports we have one giving it as "unknown," 3 started in the picker room, 2 in the carding, 3 in the drying machinery, 2 in the engine and boiler room, 1 of which was supposed to be incendiary, 1 started in the office, 1 in the spinning and 1 in the weaving department.

In cotton mills what few reports we have complete on this point show 7 fires to have started in store houses, 5 in the carding or in the picker department, 1 in the office or in cloth room, 1 in the dye house, 1 from an overheated journal, and 1 from lightning.

Eight reports from knitting mill fires which mention this point, give 5 as originating in the picker department, 1 in the drying room and 2 on the premises of other tenants.

A Generous Hearted Blunder.

In conversation with various parties as to the cause of strike at the Lymansville Mills, Lymansville, R. I., we find the underlying reason seems, to be, as far as we can judge, not dissatisfaction with wages, but an objection to running two looms on plain dress goods. This objection is not primarily from stupid obstinacy, but from the fact that by running two looms instead of one, there must inevitably result a lessening of employment to labor in this mill.

We do not think it is even claimed that on this class of work in question, the running of two looms would be in any way a hardship, and operatives thus employed, as far as we can learn, could earn easily from $1.75 per day upward.

We cannot but admire and sympathize with the generous brotherly feeling in as far as that is an element in the strike, while we deplore the lack of judgment and plain business sense which this strike so fully illustrates.

Our sympathies are with the many whenever they are right and sensible in their methods, but when it comes to the action which results in *actually* taking bread from any set of peoples' mouths on the *theory of* preventing people from doing fair work for fair pay and without undue hardship, simply because the same work could be made to furnish employment to more people, we condemn the *blunder*. This theory carried to its ultimate conclusion would debar the use of all improvements in machinery and methods, and is in fact the exact theory which in practice has brought about the deplorable industrial conditions which prevail in China and India.

The facts are, that if one mill does not take orders for these goods on a two loom basis of production cost, another mill will, and if that other mill is outside our own country, state or town, our country, state and town are just that much the loosers, and our people who might have work at good pay on two looms, have idleness of their own choosing, and the resulting loss tends to further decrease the demand for goods and increases the aggregate of human misery.

There is far more comfort for labor now than fifteen years ago; far greater luxuries than thirty years ago, and less hours of labor, on an average, bring far greater returns in the matter of comfort and luxury than in any other age or country. This is owing to improved machinery and the general tendency to produce as much per operative in as short a time as possible.

When we find the facts so fully contradicting the surface theory, when we find nations who have come to abject poverty by following this wrong theory, and know that our own prosperity results from opposite practice, it seems strange that people should object to running two looms on easy work of this description at good daily average wages, and deliberately choose no looms, with beggary or starvation resulting.

Business men who have given liberal credit through the Olneyville strike are now heavily burdened with the effects of that regretable affair, and have very little appetite or available capital for more, while the class of people who are most easily induced to strike, are apt to have no large reserve capital to fall back upon. We have sympathy for the workers as a matter of sentiment, for they need it greatly, but in all honesty we must say to them that this action is not for the real good of any one, but for the great injury of all concerned, especially those who need the wages they so foolishly refuse, through a good hearted, but radically mistaken theory.

National labor laws tending to uniformity and gradual reduction of the hours of labor, with sufficient protection to prevent foreign goods from occupying our home market, will tend far more to the benefit of labor than any attempt to minimize the production of the individual worker.

Style Suggestions for Woolen Manufacturers.

The market on woolen goods at the present time is in probably the most unsettled state that it has ever been. The extreme caution of the buyers in selecting goods, because of the purchasing power of the people being curtailed, has opened the eyes of manufacturers to the fact, that there will only be about fifty per cent. of the usual business done, and this gives rise to the sharpest kind of competition, for the mill which does not take orders now, will either have to stay closed or pile up stock goods to sell later at an enormous sacrifice.

The woolen business is in about the worst shape it could be, but the clothing business, under the Wilson bill, is hit a tremendous blow, and several of the leading clothing houses in the United States talk of manufacturing their clothing in Europe. The New York Press, of Feb. 9th, says that "the Republicans open factories, and the Democrats soup houses." Of course this state of affairs can only exist until the people have a chance to express themselves again at the polls.

Wool is as cheap to-day as it can be under the new bill, and this will be seen from a comparison of the London and New York quotations. The prices of almost all the leading makes of goods have been placed on the Wilson bill basis, and lines with such prices are doing the business.

Of late years there has been a great demand for Kerseys for overcoats, and this season illustrates the anxiety of manufacturers to get orders by the amount of lines of this class of goods on the market. At $2.00 per yard there are five lines; shown by James Talcott, Sawyer Manning & Co.; J. M. Valentine; Converse, Stanton & Cullen; and Moody's.

At $1.90 is the Warren, and the Campbells were at this price, but have reduced their line five per cent.

At $1.62 1-2, Converse, Stanton & Cullen are showing a fine line of goods. But when the price of $1.50 is reached, the climax is capped, for it seems everybody has striven to get a line at this price. Converse, Stanton & Cullen have one at this figure which is piece dyed; Langley has a good line, so have Jacob Wendell & Co., Sawyer, Manning & Co., James Talcott, W. S. Mali & Co. and Washington Mills. Most of these lines were at $1.75 and $1.85 last year, and consequently show quite a reduction.

At $1.35, Sawyer Manning & Co. and E. Oelberman & Co.; at $1.05 Bauendahl & Co. and Barnes, Hutchinson & Pierce have lines; the one shown by B. H. & P. is probably one of the best pieces of goods on the market for the money. At $1.25 E. Oelberman & Co. have a very fine line, and at this price the Washington Mills and Sawyer, Manning & Co. are also showing lines. There are also Kerseys at one dollar.

In these goods nothing but black, blue and Oxfords are selling, there being no demand for light colors, not even among the southern trade.

Meltons for the present season are out of it, there being scarcely any demand for them, except in the cotton warp class of goods, and here is also displayed the same sharp competition as in the higher grades. In the line of 3-4 goods at 40 cents, we find the Auroras shown by Frost, and also a line shown by James Talcott and one by Otherman, Dyer & Southwick, while close to these comes a line shown by Brigham, Lawrie & Mann, 3-4 at 37 1-2 cents.

Freizes have had a very uncertain value and have fallen considerably of late; in these are the Broad Brook, at $1.42 1-2, Phillips & Kunhardt, at $1.37 1-2 and A. D. Julliard, at $1.25. Cassimeres are selling very light, only the best known makes receiving any orders at all, and then only in the neatest patterns.

Cheviots are not in demand, and the great tumble that this class of goods has had, is thoroughly illustrated by the price of a certain line which was shown by Phillips & Kemhardt for $2.10 last year; this year at $1.37 1-2

Fine worsteds are only taken under protest, because the buyers expect to get foreign worsteds cheaper than we can manufacture the same class of goods here. The extreme uncertainty of the tarrif has led to the slashing of prices every day, and a person who is well posted on the prices of different goods in the market to-day, has the pleasure of learning them all over to-morrow.

The Absolute Law of Mathematics as to Wages and Tariff.

As long as one and three make four, so long will the product of labor, added to raw stock, constitute practically the entire cost of manufactured product. (A small fraction of expense must be allowed for certain fixed charges, taxes, etc.)

The only true raw stock is the soil, ore in the ground, water, lumber as standing in the forest, and similar natural wealth. To utilize this, the ore must be taken from the ground by labor, the sheep must be herded, fed, shorn and cared for by labor, although to the woolen manufacturer the wool is raw stock.

On the true basis, the plant of a manufacturing establishment, the machinery, etc., are simply the results of so much labor, and a little timber and mineral land, with their own grounds and perhaps water power added, constitute the only raw materials.

Now if labor has produced all this, with the goods they make representing labor as the great element of cost, it is natural that with one mill paying its Americans, Englishmen or Germans, one-half dollar per day, another paying the *same class of* workers (and many of them educated and graduated from the first mill) one dollar per day, and a third paying one fifty per day, that the mill paying the lowest wages, especially when it is really the parent in skill and experience of the one paying the highest, can produce goods for far less cost than the one paying highest prices to labor.

Human nature buys where it can get the most and best for the least money, hence, if the people working in the highest paying mill buy the product of the lowest priced labor in the mill where many of them formerly worked, who will buy the product of their own labor unless some artificial barrier is erected to equalize selling prices?

If the product of labor is not sold at a profit, no mill can meet its pay roll for an extended time, hence the pay must cease at any figure and high priced labor becomes unproductive idleness, with starvation in the near future for those who have only small accumulations.

Before starvation, however, comes a drop in the provision market caused by the change from three square meals and a lunch per day to one poor meal or less. That hits the farmer, and by that time we are all suffering together.

With the prospect that any competitor can come into our market, and undersell us, a wise business man looks to the lowest possible cost of goods, whether buying the product of labor or labor itself, and he who piles up immense stocks on a falling market is either destined to lose all his capital and ability to pay even the lowest price for labor, or will at least so cripple his resources from generosity in giving employment, that his needed working capital will be absorbed in the losses resulting.

To judge from some recent strikes, one would think that the employees sincerely believe that the wage question is a matter purely within the control of the employer, and that he could pay any price which is desirable, regardless of what price can be realized for the product of that labor, or even can pile up stocks indefinitely.

We believe that low prices are a curse to all producers and that all but tramps, criminals, paupers, infants and imbeciles are producers, while the few non-producing classes live wholly upon the producers.

If we want to buy goods cheap, some one must have worked cheap to make those goods, and if the cheap, cheap, cheap nonsense is kept up, American labor must loaf and starve, until it is willing to work cheap, cheaper, cheapest.

Under high tariff, our workers have prospered as never before. Under the shadow of non-protective-haul-down-the-American-flag-policy, our people have suffered as never before within the memory of the present generation.

One-third of our industrial population is now idle, and while trade must necessarily revive somewhat to supply goods needed to make life tolerable, still the time of healthy expenses from healthy incomes is deferred until we find how much *cheaper* we must work.

Cheapness is a great thing, but our own work must follow our general market. Every day of idleness is so much absolute waste from the comfort and luxuries of the aggregate of humanity. It is natural for the buyer to wait for this infernal cheapness if it seems in the near future, but if we are the sellers of labor or goods, somehow that same miserable cheapness doesn't seem so desirable.

As labor is all most of us have to sell, we hate to sell *all* cheaper for the sake of buying a small part of our necessities or luxuries cheaper, and taking the starvation readjustment incident to the privilege of *working cheap*.

Widely Quoted.

As usual, our Annual Report of New Mill Construction, which was published in our January issue, has been very widely quoted and commented upon by the leading daily newspapers all over the country. Perhaps more so than usual owing to the change of administration and the effect upon textile industries. It has been reported in leading papers from Bangor, Me., to San Francisco, Cal., and almost all the New York, Boston, Philadelphia, Fall River, Lowell and New Bedford papers made it a subject of editorial comment, and we received many words of praise for the completeness of the report.

We have had scores of marked notices sent us from papers all over the country. Three out of every four take occasion to remark that the TEXTILE MFG. WORLD is acknowledged authority in this line of business.

A Good Word for the Consular Service.

Whatever else may be said of our consular service, it certainly furnishes the merchants and manufacturers of this country with very valuable information in the shape of consular reports to the State Department. One of the most valuable pamphlets in the series is the January number, the entire contents of which comprise reports from different consular offices on the proper methods of packing goods for export to the countries which they represent.

Almost every consul has something to say upon the improper methods of American packers and shippers. They emphasize the fact which we have repeatedly called attention to, that one great reason why American products do not attain greater sale in the Latin-American countries, and in those sections where transportation is an important feature of commerce, is because our merchants do not take heed to the requirements of the domestic trade of the countries to which they are sending their goods. The recent reports to the State Department give explicit directions in regard to proper packing, stating what sort of treatment the goods have to receive, and explaining how the exporters from other countries pack their goods, and every mill in the export trade ought to send for a copy.

—One who even casually glances through the pages of this number of the TEXTILE WORLD cannot fail to be attracted by the striking "Allegory" advertisement of John B. McCormick, Holyoke, Mass. It is an advertisement that will not be passed over hastily, for its originality commands attention and invites closer inspection. When once the reader begins to study it his attention is held until he has made a close inspection of the details, and thinks he has mastered all. But even then the uninitiated are likely to fail to see many points "between the lines" which those most familiar with the water wheel business will appreciate.

Some will smile and some will frown, but in either case the advertisement has done its work and effectively advertised McCormick's Holyoke Turbine, and excited interest in it. That is the special mission of an advertisement, to excite interest. The merits of the article itself must be depended upon to sell the goods.

Mr. McCormick's conception of this striking advertisement shows that his ability to construct ads. is on a par with his talent in designing turbine wheels.

PATENTS

CROSBY & GREGORY,
34 SCHOOL STREET.

Telephone 3593, Boston. **Office Established 1854.** Cable address Aniline.

George W. Gregory, in November, 1874, resigned his position as Principal Examiner U S. Patent Office to enter the firm.

Patents secured in the United States and all other countries. Reissues obtained. Interferences conducted. Suits brought and defended for infringement, and searches made as to the validity of patents. Prepared to give special and expert attention to cases involving knowledge of cotton, wool, leather and metal working machinery, including boots and shoes and electrical, chemical and metallurgical inventions and steam engineering. Correspondence solicited. No charge for preliminary advice. Personal consultation best when possible.

HOPEDALE, Mass., January 2d, 1893.

Mr. George W. Gregory, of Crosby and Gregory, has taken out for us since January, 1875, more than two hundred patents. GEO. DRAPER & SONS.

PATENTS

Joseph A. Miller & Co.,
CONSULTING ENGINEERS.
EXPERTS IN THE
TEXTILE, MECHANICAL AND CHEMICAL ARTS.

A thorough practical and scientific knowledge of the useful arts, and extensive experience, enables us to be of great assistance to manufacturers and inventors in perfecting useful improvements.

Researches made in American and foreign works to determine the validity and utility of inventions. Reports and arguments furnished in patent litigation.

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PATENTS

Obtained in U. S. and Foreign Countries. Send model or sketch for free advice as to patentability. Pamphlet of instructions sent on application. *Located at Washington, and accessible to all records of U. S. and Foreign patents, our facilities are exceptional.* Address FITZGERALD'S PATENT AGENCY, Washington, D. C.

MAKE YOURSELF A MECHANICAL ENGINEER OR DRAUGHTSMAN;

or qualify to take charge of, or to superintend the manufacture of Machinery, by devoting your idle hours to **Home Study**, by the method of THE CORRESPONDENCE SCHOOL OF MECHANICS, Scranton, Pa.

To begin, Students need only know how to read and write.

MODERATE CHARGES. SEND FOR FREE CIRCULAR.

New Machinery and Processes Coming on the Market.

Items for this department are inserted without regard for advertising patronage or money consideration. We want them as news, and any one sending such particulars will confer a favor on the editors. The statements made are claims, and must not be understood as officially endorsed by the editors.

Waste End Transmitter. James H. Paton, 185 Summer Street, Boston, has put on the market Robinson & Conley's patent card waste transmitter for working back waste side ends from finisher cards. They claim it to be simple in construction, economical in working and durable, and is working in some of the best mills in the United States and Canada.

Loose Reed Motion for Power Looms. We understand that Wm. McMichael, Woonsocket, R. I., has an improvement in the nature of a reed, having the top stationary in the lay and the bottom movable under pressure backward and forward in the direction of line of movement but independent thereby the forward movement of the bottom of the reed will be instantly stopped when striking an obstruction in the shed, such for instance as a shuttle caught therein. It is claimed that this motion will be of great advantage in preventing shuttle smashes.

Cloth Washer. A. Hopkins, Pascoag, R. I., has made several radical recent improvements in his cloth washing machines, prominent among which is the use of self oiling bearings so arranged that no oil can get to the goods, nor any alkali to the oil in the boxes, thus protecting both goods and bearings. A decided improvement has also been made in the soap feeding box and several other points we hope to mention more fully in a later issue.

Looper. The American Knitting Mills Supply Co., 523 Arch St., Philadelphia, are selling an improved looper which is claimed with a single stitch to give as elastic a seam as has yet been produced with double stitch machines.

Rib Cutter. J. C. Goodwin, 523 Arch St., Philadelphia, has produced a rib cutter differing from any now on the market. The machine is operated by a slight pressure of the foot and cuts the ribs off with one shearing stroke.

Continuous Roll Cloth Press. Wm. Hebdon, 109 Kingston St., Boston, has taken out patent No. 513,926 for a process of pressing cloth by means of rolling in a properly steamed and uniformly prepared condition, on a roll with a long blanket of press paper or similarly prepared belt, the cloth being wound at any tension desired, independently of the tension on the pressing belt; by this method the cloth is wound simultaneously with the pressing belt and thus has a press paper on both sides wound with the cloth at such tension as to give the desired pressure. Leaving the cloth in the combined roll for such time as is necessary will give a set to the pressure. This is a revolution in cloth pressing and if it demonstrates the expectations of Mr. Hebdon is an advance in preventing several causes of loss as by present methods. Arrangements of very liberal nature will be made with any responsible party to take up the building of this machinery and Mr. Hebdon now desires to negotiate with any good machine builder who desires to arrange for building these machines.

Oiling Device and Doffer Guard. The Whitin Machine Co., Whitinsville, Mass. are applying to the Whitin Gravity spindle an oiler and doffer guard of improved construction. The guard or latch consists of a combined spindle stop and oil cover firmly pivoted to the oil tube in such manner that dropping the spindle into the bolster automatically locks the spindle, so that it is necessary to tilt the oil cover or latch to release the spindle from the stop, and in such manner as could not occur in ordinary doffing. The spindles may be oiled without waste from the front of the frame while running. The oil chamber is always covered from dirt and lint, also preventing oil spots on yarn. No oil covers are lost, and no wrench needed.

A Ring Brusher for spinning frames. John A. Collins, superintendent of the American Linen Company, Fall River, Mass., has a new device for keeping spinning rings and ring travellers clean of fibre and dirt and to do away with the use of the spinning room finger brush. It is claimed that the brusher is one of the most economical devices brought into the spinning for years, aiding as it does the production of better (more even) yarn, reducing the amount of waste, and making a great saving in travellers, and in the time of the spinner. The attachment consists of a bar, the brush bar, running the length of the frame and attached to the Sampson and is connected to the arm which a rock shaft that runs the length of the frame in connection with the starting rod of the frame. It is operated by the doffer boy, by means of a lever or handle at the end of the frames.

Gigging Roller. Louis Clarenbach, Jr., 870 North 25th St., Philadelphia, has invented a new method of clothing to the rollers, consisting of several half circular shells tapered on each end, covered with sheet clothing. The shells are put on or taken off the rollers without disturbing the latter, turning a nut and set nut will immediately fasten or loosen all the shells so that they can be changed in position on the roller to counteract the uneven wearing of ends and centre, thus avoiding the necessity after a few weeks running of the rollers, of gigging the edges tender in order to give a proper amount in the centre of the cloth; several advantages are claimed for this system. The shells are made of brass tubing and the clothing cemented to them by a special cement.

Warp Splitting Machine. W. W. Altemus & Son, 2818 North Fourth St., Philadelphia, are bringing out their new warp splitting machine with rotary coiler and latest improvements.

List of Textile Patents for January, 1894.

Carding Engine. 511,749. E. B. Bohle, Werdan, Germany.

Carding Machine Feeding Device. 512,443. T. Kershaw, Philadelphia, Pa.

Carding Machine. Rubbing apron for. 512,590. J. Barker, Philadelphia, Pa.

Chenille Fabric. Woven. 513,284. C. A. Schmidt, New York, N. Y.

Cloth. Method of and machine for finishing. 513,926. W. Hebdon, Boston, Mass.

Drawing Rolls. For machine for working fibrous materials. 512,651. W. H. Goldsmith, Berkeley, R. I.

Dye. Blue. 512,466. M. Ulrich and J. Bawman, Elberfeld, Germany.

Dye. Blue Black. 512,467. T. Diehl, Berlin, Germany.

Dye. Crimson Azo. 512,116. R. Kirchhoff, Berlin, Germany.

Dyeing Apparatus. 511,985. E. Woodcock, Sr., N. O. Woodcock, and E. Woodcock, Jr., Huddersfield, England.

Dyeing Apparatus. 512,922. E. Turnbull, Passaic, N. J.

Dyeing Apparatus. 512,949. E. Deste, San Fernando, California.

Dyeing, etc. Apparatus. 511,945. A. Graenger and W. T. Whitehead, Manchester, England.

Dyer's Vat. 513,321. T. A. Harris, Philadelphia, Pa.

Embroidering Machine. 513,861. T. F. Barnum and J. McDermott, Troy, N. Y.

Fabric Treating Apparatus. 513,026. J. Pollard, Hyde, England, assignor to Mather & Plate, Manchester, England.

Fibre Separating Machine. 512,863. M. A. Clewnan, San Francisco, Cal.

Hosiery Fulling Machine. 513,609. F. A. Tawzer, Portage, Wis.

Knit Garment. 513,047. W. F. Kneip, Ypsilanti, Mich.

Knitting Machine. 512,099. C. B. Sander, Chemnitz, Germany.

Knitting Machine. Automatic electric stop motion for. 513,259. J. Buchel, New Orleans, La.

Knitting Machine. Circular. 513,707. H. E. Harbaugh, Rockford, Ill., assigned by mesne assignments to the Chicago Rockford Hosiery Co., Kenosha, Wis.

Knitting Machine Hold down. 513,441. H. C. Rightmire, Philadelphia, Pa., assignor of one half to Thomas A. Pearce.

Knitting Machine Pressers Wheels etc. Adjustable supporting device for. 513,157. A. & J. Tompkins, Troy, N. Y.

Knitting Machine Stop Motion. 512,810. G. J. Manderfield, Royersford, Pa.

Loom Patten. 512,171. T. Ehrenberg, New York.

Loom Harness. Evener mechanism. 512,172. T. Ehrenberg, New York, N. Y.

Loom Jacquard Mechanism. 511,986. N. A. Woodhead, Philadelphia, Pa.

Loom Let Off Mechanism. 513,867. J. C. Bill, Willimantic, Conn.

Loom Pile Wire. 512,063. G. Segschneider, Yonkers, New York, assignor to J. T. Waring, same place.

Loom Shuttle. Operating electric. 513,615. L. W. Lombard, Saco, Me., assignor to J. N. Smith and B. F. Spinney, Lynn, Mass.

Loom. Swivel. 512,474. J. Kennedy, Patterson, N. J.

Loom. Swivel. 512,475. J. T. Kennedy, Paterson, N. J.

Loom for Weaving Pile and other Figured Fabrics. 511,913. W. C. Smith and J. Barlow, Kiddermeister, England.

Loom Weft Fork. 513,928. W. Hinchliffe, Huntsville, Ala., assignor of one-half to Geo. O. Draper & Sons, Hopedale, Mass.

Loom Wire Heddle. 513,063. M. Strakosch, New York, assignor of two-thirds to Frank Wolf and L. Salzer, same place.

Mordanting Fabrics. 512,364. O. P. Amend, New York.

Seamless Figured Fabric. 512,694. R. K. Giffen, Paterson, New Jersey.

Spindle Bearing. 513,227. W. E. Allen, Providence, R. I., assignor to Geo. O. Draper & Sons, Hopedale, Mass.

Spinning Fibrous Material. Apparatus for. 511,878. N. Cupers, Weerts, Netherlands.

Spindle Retaining Device. 513,898. G. A. Draper, Hopedale, Mass., assignor to Geo. O. Draper & Sons.

Warping Machine. Electric stop motion. 512,913. C. Denn, J. Cocker, & C. Denn, Philadelphia, Pa.

Warping or Beeling Machine. 513,431. H. P. Mallison, Sansdown, Pa., assignor to M. A. Furbush & Son Machine Co., Camden, N. J.

Winding Yarn. Machine or apparatus for. 512,860. J. E. Broadbent, Stalybridge, England.

Egyptian and Foreign Cotton for the United States.

We have frequently drawn attention to the fact that the United States has become an importer of the cotton of Egypt, and have also pointed out what this indicates. Some figures published recently induce us to return to the matter.

The importations have come from Egypt and India, but chiefly from Egypt. In 1889 there were 7,973,039 lbs. of cotton imported into the United States, of the value of $1,194,505. There was but little increase to these imports in the following year, 1890, but the imports of cotton in 1891 were more than double those in 1889, both in quantity and value.

The number of pounds imported in that year was 20,908,817, of the value of $2,825,004. In 1892 the imports of cotton in the United States were 28,663,769 lbs., of the value of $3,217,521, and during the fiscal year 1893, which has just been closed, these imports of cotton in the United States have been greatly increased, and amounted to 43,381,952 lbs. of the value of $4,668,799.

It will be observed that from 1889 to 1893 the imports of cotton to the United States, and mostly from Egypt, have more than quadrupled both in value and amount, and during the past year the value of imports of cotton to the United States have been nearly $5,000,000.

Once more we have to impress upon the English cotton trade that under the regime of high protection which has prevailed for thirty years, very fair progress has been made in overcoming climatic and other difficulties in the way of spinning fine yarns and manufacturing fine cloths.

Whether, however, this has been of such a character as would enable American producers to keep our competition out of the field under a more liberal tariff or not, we are unable to say. The fact however, ought to be noted, that the manufacture of fine goods and yarns is being carried on.—Textile Mercury, Manchester, England, Dec. 30, 1893.

The last paragraph fully expresses the true situation. Reduced protection, means reduced difference in wages. The manufacture of fine cotton goods is not beyond American skill, but the cost of labor is the cause of fine goods selling at fifty cents to ten dollars per pound or more (as laces for instance), or from twelve to thirteen cents per pound as in the case of coarse yarns.

The difference in cost of material in the two grades is very small, but as the price represents almost entirely labor, it follows that the labor cost abroad being so much less than here, that with greatly reduced protection we must greatly reduce the higher cost of labor or cease to make the finer goods.

In goods costing 12 cents per pound, the material for which costs 8, a duty of 33 1-3 per cent. on value would be a protection of 100 per cent. on labor.

In goods costing $1.00 per pound with 15 cents for material, the 33 1-3 per cent. of the value would be only about 40 per cent. of the amount of the labor, hence the finest problem in making fine goods is, as practically admitted by our contemporary, an element of wages and financial returns, even more than mechanical skill.

The mill getting skilled labor for the least money can find good profit on the finest goods whether at home or abroad, while on coarse goods the element of labor is of secondary expense in cost of production.

The moral of this seems to be that we must throw our best workers out of employment or greatly reduce their wages, else the foreign manufacturer with cheaper labor can jump into our fat market of pasturage, while we approach this standard through the idleness and starvation lane, until neither our market nor our wages are better than other nations enjoy.

This is levelling *down* to the foreign basis, and is easier than coasting down hill, but true business and philanthropy unite in levelling *upward*.

Under high tariff in 1892 our imports were the largest ever known in our history, *because* having prosperity and ability to buy, we bought foreign as well as American prosperity.

Under the shadow of the Wilson bill however, our imports have decreased so greatly that bonds must be issued to meet current governmental expenses, but this misfortune is more fortunate than for increased imports to still further increase idleness, until we reach foreign standards of wages and living.

Verily if this is the shadow somewhat magnified by uncertainty, the substance, when the disadvantage of uncertainty is removed, does not look to our eyes like increasing wages or general prosperity.

"Cotton Facts."

We have received from Alfred A. Shepperson, Cotton Exchange Building, New York, the edition of "Cotton Facts" for December, 1893. This little book, published annually, is so well known in the cotton trade as an authoritative reference on all matters relating to the statistics of cotton and cotton manufacture in the United States as well as in other countries, that it is only necessary for the announcement to be made that a new edition is published to insure its eager welcome by the trade. From year to year Mr. Shepperson adds new features of value to this reference book until now it seems to contain an answer to every question that might be asked about the cotton crop and cotton manufactures from a statistical standpoint. A valuable feature of each edition is the review of the previous season and the prospect for the coming season, and from this valuable article we have made liberal extracts in another portion of the TEXTILE WORLD.

In the present edition Mr. Shepperson takes occasion to explain the Department of Agriculture's methods of making up its reports of acreage and condition of crops, and it is a source of satisfaction to know the methods upon which this important work is accomplished, and the full explanation of the system should tend to impart greater confidence to the department reports, which of late have been rather lightly spoken of in some quarters.

The acreage in cotton of the cotton growing states is a very valuable addition to Cotton Facts, as well as the article on the consumption of Egyptian and Peruvian cotton in this country. It is well known that the imports of Egyptian cotton have increased at a remarkable rate in the last five years, but it has not been so generally realized that the United States are importing such a large quantity of rough Peruvian cotton for the use of woolen and knit goods manufacturers, and Mr. Shepperson calls attention to the fact that the importations have increased from 14 bales in 1885 to about 24,000 bales in 1893.

Cotton Facts will be mailed to any address on receipt of 75 cents.

Removal.

Messrs. George S. Harwood & Son, builders of the Bramwell and the Apperley feeders, have removed their offices from their former location, where they were for so many years, to No. 7 Water Street, rooms 812 and 813, in the new building opposite the post-office.

Important Improvements Acquired by Messrs. Nye & Tredick.

We understand that Messrs. Nye & Tredick, of Philadelphia, have obtained control of the important improvements embodied in the circular rib knitting machines made by the Weyburn Special Machine Co., of Chicago. Those who visited the World's Fair will remember the attractive exhibit made by the Weyburn Co., and knit goods manufacturers will appreciate the features of merit embodied in their machinery, which we are informed was awarded the only medal and diploma for circular rib knitting machines.

The fact that Messrs. Nye & Tredick appreciate the merits of this line of machinery sufficiently to acquire possession of it from Mr. Weyburn, is good evidence of its importance, for this enterprising firm does not offer to the trade any machinery which is anything but first class, and if, as we understand, their new circular rib knitting machines will embody the features of merit of the Weyburn machinery, it is safe to assume that it will be a marked improvement on what had preceded it.

The Weyburn Cutting Machine Co. has arranged with Messrs. Nye & Tredick to sell its cloth cutting machines for clothing and knit goods manufacturers. Mr. E. D. Weyburn will be the manager of the Chicago branch of Messrs. Nye & Tredick, and will look after their interests in the West, South and Canada, with which section he is thoroughly familiar, having done business in it for many years. The Chicago office is located at 18 West Randolph St., and orders for the cloth cutting machinery may be sent there, or to the Philadelphia office.

RAW MATERIAL.

The Wool Market.

BOSTON, Feb. 10, 1894.

January will pass for the dullest month for a year. Although some business was done, there was but little satisfaction in it, as sales were scattering and buyers well sought. For a few days previous to the passage of the Wilson Bill in the House, the market was active and prices well sustained, but from the day the bill passed the House, business has been falling off steadily, until at present writing, the market has about reached its previous conditions of dullness.

During the short period of activity some large lines changed hands; all classes of manufacturers being represented; the demand was for almost every thing on the list. Scoured wools of all grades were in good demand from the knitters, and desirable stock found ready market.

There now seems to be a speculative feeling among the dealers, and almost anything that is offered a little under market quotation is taken to account by these believers of better prices.

Fine Ohio and Pennsylvania Delaine has been moved to some extent at 24 to 25 cts.; 25 1-2 is asked for samething choice. Michigan at 22 to 23 cts.

No. 1 washed staple wools have been in some request, and move at 23 1-2 to 25 cts.

XX Ohio and Pennsylvania have had good inquiry; a large block moved at 22 cts.

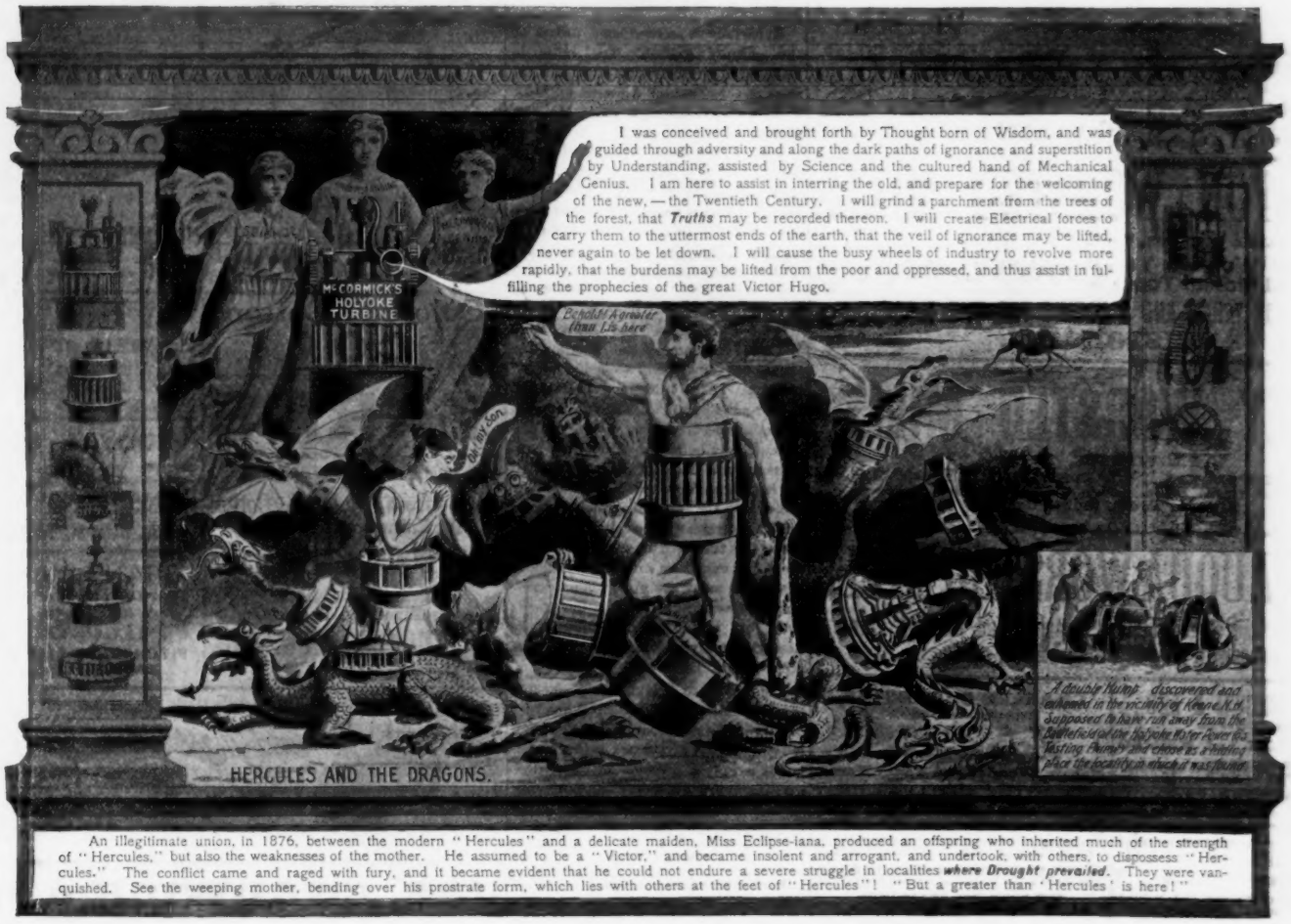
X Ohio still hangs at 21 cts, and some business done at this figure. Michigan of some grade, is quotable at 19 to 19 1-2 cts.

Fine unwashed has moved at 15 cts.; unmerchantable at 17 cts.

Medium unwashed wools have been in good request; anything that has staple, of one-quarter blood grade or below, is taken readily. The supply of this desirable grade is small and prices firm. Braid and common wools are particularly scarce. Three eighths is neglected; this grade of wool under present condition being worth several cents per clean pound less than the lower grades.

AN ALLEGORY,

for the Careful Study of Owners and Users of Water Power.


I was conceived and brought forth by Thought born of Wisdom, and was guided through adversity and along the dark paths of ignorance and superstition by Understanding, assisted by Science and the cultured hand of Mechanical Genius. I am here to assist in interring the old, and prepare for the welcoming of the new, — the Twentieth Century. I will grind a parchment from the trees of the forest, that Truths may be recorded thereon. I will create Electrical forces to carry them to the uttermost ends of the earth, that the veil of ignorance may be lifted, never again to be let down. I will cause the busy wheels of industry to revolve more rapidly, that the burdens may be lifted from the poor and oppressed, and thus assist in fulfilling the prophecies of the great Victor Hugo.
McCORMICK'S HOLYOKE TURBINE
Behold! A greater than Lis here
Ah! my son
A double Hump discovered and exhumed in the vicinity of Keene, N. H. Supposed to have run away from the Battlefield of the Holyoke Water Power Co. Testing Flumes and chose as a fitting place the locality in which it was found.

HERCULES AND THE DRAGONS.

An illegitimate union, in 1876, between the modern "Hercules" and a delicate maiden, Miss Eclipse-iana, produced an offspring who inherited much of the strength of "Hercules," but also the weaknesses of the mother. He assumed to be a "Victor," and became insolent and arrogant, and undertook, with others, to dispossess "Hercules." The conflict came and raged with fury, and it became evident that he could not endure a severe struggle in localities ***where Drought prevailed.*** They were vanquished. See the weeping mother, bending over his prostrate form, which lies with others at the feet of "Hercules"! "But a greater than 'Hercules' is here!"

No better *proof* of the superiority of "McCormick's Holyoke Turbine" over all others, than the *fact* that it *has been adopted* by the following well-known manufacturers of Turbines:

J. & W. JOLLY, HOLYOKE, MASS., U. S. A.
S. MORGAN SMITH, YORK, PA., U. S. A.
DUBUQUE TURBINE & ROLLER MILL CO., DUBUQUE, IOWA, U. S. A.
THE RODNEY HUNT MACHINE CO., ORANGE, MASS., U. S. A.

No difference what the situation, or what forms of vertical or horizontal flumes or settings be required, or *what failures other makers of turbines have made*, state your requirements to either of the above named manufacturers and they will give the desired information, supply your wants and *guarantee results*.

Respectfully yours, **JOHN B. McCORMICK.**

Territory wools have been moved in large blocks. Fine and Fine Medium have the call and wools of good staple find ready purchasers. The market seems well cleaned up on these grades. The scoure cost of these wools is 38 to 40 for Fine; 34 to 36 for Fine Medium. Ordinary medium wools are hard to place at any price.

There has been considerable done, in 6 and 8 months Texas with the knitting trade; 12 months wools are well sold up.

Pulled wools of all grades have been active, and good sized lines have been moved. B and C supers are in good request; 28 cts. clean is asked for good B., 24 to 26 cts. for C; A supers are worth from 32 to 36 cts. Combings are well sold up. 26 to 27 cts. in grease is asked for Medium.

Australian wools have sold to a limited amount, the demand being for the finer grades from flannel mills, and some business in combings, 60 and 64 cts. quality, has been done with the worsted mills. At the London sales which closed on the 7th about 1200 bales were taken for the American account. The next series open on Feb. 27.

From the present outlook it would seem that wools, other than fine fleeces, could go but little if any lower, even with wool duties removed. With the new clip most in sight, it does not seem possible to force prices higher with present percentage of business. Good demand will no doubt harden values, but during the time of value readjustment, there is bound to be more weakness.

Cotton Prospects for 1893-94.

Extract from Review of the Cotton Season of 1892-93 and the Prospects of 1893-94, in "Cotton Facts," published by A. B. Shepperson, Cotton Exchange Building, New York.

For the season of 1893-94, upon which we have now entered, it is certain that unless some unexpected strike or financial panic occurs, the European spinners will do a better business and require considerably more cotton than last season. The heavy stocks of British yarns and goods, which so depressed the market during the early part of last season, have long since gone into consumption, and the market for manufactured products is in a healthy condition. My friend, Mr. Thomas Ellison, of Liverpool, estimates the present weekly consumption of British mills at 80,000 bales (of 400 pounds net), this being their rate of consumption when the strike commenced last season. He estimates the present weekly consumption of Continental mills at 89,000 bales (of 400 pounds net), against 88,000 bales last season, and calls the stock held by European mills on November 30th only 289,000 bales (of 400 pounds net), against 478,000 bales of equal weight at corresponding date last season. The surplus stock of cotton at the mills on November 30th, it will be seen, was 189,000 bales less than last year, and really equal to only ten days' consumption. Mr. Ellison takes a cheerful view of the situation and writes on December 13th that he expects the present rate of European consumption to be maintained.

THE OUTLOOK

for the American mills is not so clear. Owing to the financial troubles, and the long delay of Congress in passing remedial legislation, the fall business of the mills was very light, and there has been a considerable accumulation of goods. The recuperation of general business from the effects of the panic, has been slow. Everybody is inclined to be very conservative. Thus it is that spinners are buying very sparingly of cotton and merchants are taking goods only for early requirements. It is thought that the stock of cotton goods in the hands of jobbers and retailers throughout the country must be very light, and, therefore the spring demand should be large and keep the mills busy. Just as the delay of Congress last summer in legislating in regard to the silver question injured the fall trade, there is the present fear that a similar delay in dealing with the new Tariff bill now before Congress, may seriously injure the spring trade of the country. The uncertainty in regard to what kind of a Tariff bill will eventually be enacted, will undoubtedly interfere with some branches of business, and may cause a general dullness of trade, which would affect injuriously the business of the mills.

THE STOCK OF COTTON

held by the mills at present is probably 300,000 bales less than a year ago, and though there may be a poor spring trade, it is not probable that the business of the first six months of the season can be as bad as that of the last six months of the season of 1892-93. Should Congress dispose of the Tariff question promptly, a rapid revival of nearly every branch of trade would almost certainly ensue, and the business of the mills would undoubtedly share in the general activity.

It does not, therefore, seem at all likely that American spinners will buy less cotton than last season, and there seems to be a fair probability they may take 100,000, and possibly 200,000 bales more.

Present prices of cotton are very low. Indeed, except in 1892, they have not ruled so low in January for over 40 years, and but for the uncertainty respecting Tariff legislation, it is proable that spinners would now be free buyers.

There is still a wide divergence of estimates of

THE SIZE OF THE AMERICAN COTTON CROP

of 1893-94, but the opinion of the trade of the country seems to be rapidly concentrating upon the idea that the crop will turn out to be a very moderate one.

Based upon information from a large number of Southern correspondents upon whose judgment I rely, because they are all gentlemen of intelligence, and generally the most prominent merchants in their respective localities, I think the yield of the present crop will show the following gain over last season, viz.: 240,000 bales in the Carolinas, Georgia and Florida; 360,000 bales in Alabama, Mississippi and Louisiana; 150,000 bales in Arkansas, making total gains of 750,000 bales. I place the Texas yield at 1,800,000 bales, being a loss of 350,000 bales. The net gains over last season's yield, which was about 6,400,000 bales, is thus indicated to be 400,000 bales, making a total yield of about 6,800,000 bales. As the season commenced with comparatively little old cotton in the interior, the commercial crop should be more likely to be below than above the actual yield, as considerable cotton may be carried over to the next season, should low prices continue.

It is worthy of note that all who have made through investigations of the subject by inquiries upon an extended scale throughout the south, have reached conclusions similar to my own.

THE GRADE OF THE PRESENT CROP

will be above an average, but the staple is shorter than usual, and notably so in Texas, where the season was too dry. The average weight of bales will probably be at least six pounds less than last season, as the shortage is already about four pounds. The reduced weight from last season will be equal to about 87,000 bales.

The Egyptian crop will probably be about 75,000 bales (714 pounds net) less than last season, but the staple is better than usual.

The crop of India is better than last season, and shipments to Europe may be 150,000 to 200,000 bales (of 400 pounds net) more.

Mr. Ellison, of Liverpool, in view of the larger supply expected from India, and the smaller supplies than last season from Egypt and other countries, estimates that the consumption of European and American mills this season will require an American crop of 8,177,000 bales.

Mr. Ellison's estimates of consumption are reasonable, and include about 100,000 bales increase for America. It would, therefore, seem that as the American crop falls short of 8,177,000 bales, just to that extent will the stock of cotton in European and American markets be reduced by the end of the season. In other words it seems quite clear that European and American mills will spin 8,177,000 bales of American cotton this season, and if the crop should prove to be only 6,800,000 bales, the difference will come out of the stocks of the various markets and thus leave very much reduced stocks at the close of the season. The present stocks of cotton at the mills of Europe and America are so low that it is not probable they will be further trenched upon.

It looks as if the future course of prices will turn chiefly upon the further developements in respect to our crop, but should those crop advices cause lower prices, then the question of the acreage of the next crop will be a new and important factor in the situation. To the average planter there is no profit in cotton on the basis of 8 cents for Middling Uplands in New York, and a reduction in price will probably cause a reduction in acreage. The great reduction of cotton acreage in 1892 should forever set at rest the utter fallacy that Southern farmers will always plant full crops of cotton regardless of its price.

ALFRED B. SHEPPERSON.

New York, January, 1894.

YARNS.

The Eastern Yarn Market.

BOSTON, Feb. 10, 1894.

Double and Single Roving Cop Yarn. Spinners are getting very few orders and at prices that are really very much below cost. It is the writer's opinion it would be the best thing that could happen if the spinners of all mule spun carded cotton yarn would agree to shut down for a certain period and thus bring the trade to its senses. It is not sensible to run machinery at a dead loss and force sales of yarn on knitters who buy it, not because they want it, but because it is cheap. Knitters are using very small quantities of yarn, because of

ALLEGHENY WORSTED MILLS,

Wolstenholme, Harrigan, & Clarke, MAKERS OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY, Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes

Office and Mills: Alleghney and Trenton Avenues, Phila., Pa.

CRANSTON WORSTED MILLS

CHARLES B. ROCKWELL, Treasurer, . . Manufacturers of

Mohair and Worsted Yarns, Rovings, Fancy Yarns, Worsted and Mohair Tops, also Commission Combing.

DYERS OF YARNS AND SLUBBING FOR THE TRADE.

BRISTOL, R. I.

VALLEY WORSTED MILLS,

PROVIDENCE, R. I.

Spinners of Worsted Yarns.

For Coatings, Dress Goods, Jersey, and Knitting Purposes.

Dyed to Order in all Colors.

CHAUTAUQUA WORSTED MILLS

Medium and Fine Grade Fancy, Weaving and Knitting Yarns.

GOODWILL & ASHWORTH, Jamestown, N. Y.

WILSON H. BROWN & BRO.,

MANUFACTURERS OF

FANCY WOOLEN and MERINO

Knitting YARNS & Weaving.

GERMANTOWN, PA.

Salesroom, - 240 Chestnut St., Philadelphia.

CHARLES B. ROBBINS,

Imported and Domestic

YARNS.

Mohair, Worsted and Fancy Yarns.

Single Combed Sea Island Cotton Yarn on Cops for the woolen trade a specialty.

216 Church St., Room 12. New York.

GUERIN SPINNING CO.

JOS. GUERIN, Agent

Custom Spinning of Woolen and Merino Yarns of all descriptions (specialty in fine numbers) spun according to the Belgian system.

92 South Main St., - Woonsocket, R. I.

ABEGG & RUSCH,

WORSTED YARNS

Dry Spun, Nos. 36s to 100s.

COTTON YARNS

Nos. 12s to 120s.

92 GRAND ST., NEW YORK.

BELGIAN SYSTEM.

RIVER SPINNING CO.,

WOONSOCKET, R. I.

Woolen, Merino and Cotton Yarns. Fine Yarns a Specialty, for Coatings, Suitings, Dress Goods and Flannels, in White, Solid Colors and Mixtures.

JOHNSTON & FARIE, 132 South 3d St., Philadelphia.

HENRY C. FOX,

Commission Merchant.

Dealer in odd and end lots of

COTTON, WOOLEN AND WORSTED YARNS,

No. 45 Strawberry St., Philadelphia.

CHAS. J. WEBB & CO.,

Foreign and Domestic

WOOL, HAIR and NOILS,

142, 144 & 152 to 156 N. Front St.,

PHILADELPHIA PA.

WEAVING and HOSIERY YARNS.

We Buy for Cash

WARPS, COPS, TWIST and SOFT SKEINS, Single, Double, 3-ply, 4-ply, etc.

COLORED YARNS for HOSIERY

on Cones, a Specialty.

Correspondence Solicited.

Winterbottom, Hyde & Co.. 224 and 226 Chestnut Street, PHILADELPHIA, PA.

WM. MASON MFG. CO.,

SPINNERS OF HOSIERY AND THREAD YARNS

J. H. HAMBLY, Treas. and Selling Agent, PROVIDENCE, R. I.

RICHARD A. BLYTHE,

Fine Nos. a Specialty, 20's to 150's. Carpet Yarns and Warps, 4's to 20's.

Cotton Warps and Yarns,

114 Chestnut St., Philadelphia, Penn.

YARNS

SOLIS - - BOSTON.

179 Devonshire Street.

ANDREW J. SOLIS, Jr. & CO.

ROBERT D. MASON, President. FREDERIC R. MASON, Treas. and Sec'y.

THE ROBERT D. MASON CO.,

Established 1805. Incorporated 1892.

BLEACHERS AND DYERS

of Spool Threads, Knitting Cotton, Cords, Braids, Tapes, Stockinet and Jersey Cloth, and all kinds of single and two ply Yarns, Indigo Blues, Aniline Blacks, and Fast Black for Milling Purposes. Also Woolen and Worsted Yarns and Braids of every description.

WORKS AT SOUTH WOODLAWN, - - PAWTUCKET, R. I.

scarcity of orders and buy yarn because same is cheap and are filling their storehouses with all the yarn they dare to buy.

Knitters have secured some orders on the cheaper grades. The mills in Cohoes are generally shut down and the same can be said of Amsterdam, Little Falls and all through the Mohawk Valley.

Colored Cop Yarn. Some orders are being placed for colored yarn, but at very unsatisfactory prices. It seems as though knitters thought spinners stole their material and got their labor for nothing. The sizes mostly sold have been in heavy numbers and we note also some inquiry for the finer numbers to be used in fleece-lined underwear.

Combed Egyptian and Allen Seed. We note some inquiry and trade for fine yarns, and some orders are being placed in 1/20s, 1/30s, 1/40s and 1/50s Allen Seed and Egyptian. The Balbriggan mills have secured some orders and are running, and believe that they will continue to run. Most of the goods sold so far have been for Western and Southern account. For all this, trade is not brisk; underwear buyers are in the market at this time looking over stocks, but are not placing the orders they should place, and many are going home without purchasing at all. We believe however, that within a month or so business will surely pick up, because stocks are so light.

The prices are holding better on fine specialties than on the cheaper qualities of yarn. We note that carded Egyptian is being offered very much below reason and it is only a question of time when manufacturers will have to stop offering these carded White and Egyptian yarns at the prices they do.

WOOLEN YARN.

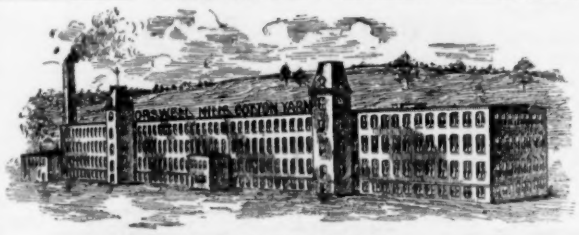
Very few orders are being placed at this time. Most of the spinners are stopped. The chances are that within a month or so trade will look better. We note some orders are being secured for two and three ply yarns. We believe that the determination of the "Mean Ways" committee in extending the time as to when the "Buncomb" Tariff Law shall go into effect will be beneficial to the trade, because buyers must buy some goods to keep along, as stocks throughout the country are very light. Hosiery, lining and weaving trade is poor just at the present time, but we look for some orders later.

WORSTED YARN.

Without doubt the postponement of the time at which the tariff law will take effect will be a benefit to this trade and may start things up, but it is almost impossible to predict anything; one day manufacturers will act one way, and the next, another way. At this writing many of the large woolen mills throughout the country are running out their stocks, preparing to shut down indefinitely. It is the first time for 30 years that such a thing as this has ever been known, but it is impossible for manufacturers to figure on their goods. They do not know what material is to cost them, they do not know how much cheaper labor has got to be before they can start up; and buyers of cloth will not place orders on an uncertainty. Mills all over the country are reducing the price of labor and will reduce still further.

The woolen industry is in a very unsatisfactory position. Some Philadelphia manufacturers are banking on the belief that the Wilson tariff law cannot be passed and are holding off from selling goods for that reason. Spinners are most of them shut down, although a few mills are running. Thos. Dolan & Co. has started up 50 looms out of 350, and is running on 2/26s. Washington Mills are shut down on strike. Some of the leading mills in Pittsfield are running out their stocks. Norwalk is the same. Woonsocket is also shut down. Farr Alpaca talk of shutting down. If the Wilson Bill is defeated they will start up at once. The Rock Mills are closed and so are most of the other Rockville mills. Phillips & Kunhardt are offering to sell goods for $1 37½ per yard which last year they sold for $2.16 and guarantee to give the same goods. This is dem-

CAPACITY, 50,000 Spindles. ORSWELL MILLS FITCHBURG MASS.



COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

Colored Cotton COP YARNS

Solid Colors and Mixtures,

Spun from Colored Cotton For Knitters and Weavers.

FAST BLACK A SPECIALTY.

Camels Hair Mixes, Jaeger Mixes and Balbriggans.

E. JENCKES MFG. CO., Pawtucket, R. I.

KERR THREAD CO.

—SPINNERS OF—

Fine Combed Sea Island COP SINGLES

All Numbers, 30s to 150s.

Fall River, Mass.

EDDY & STREET,

YARNS.

Silk and Cotton Braids for Underwear trade. Embroidery and Knitting Silks.

6 So. Water St., PROVIDENCE, R. I.

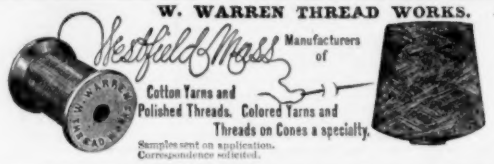
GRANT YARN CO.,

COMBED AND CARDED COTTON

YARNS AND WARPS 40s and above.

FITCHBURG, MASS.

W. WARREN THREAD WORKS.



Manufacturers of Cotton Yarns and Polished Threads. Colored Yarns and Threads on Cones a specialty.

Samples sent on application. Correspondence solicited.

JAS. CHADWICK & BRO. Limited.

Egyptian and Sea Island COTTON YARNS.

COP, SKEIN, WARP, OR CONE. 20'S TO 150'S.

ALSO FULL LINE OF IMPORTED YARNS, 40s TO 200s.

503 Broome St., NEW YORK. Branch Office, 241 Chestnut St., Phila.

O. H. SAMPSON & CO.,

YARNS,

BOSTON, 67 Chauncy St.

NEW YORK, 58 & 60 Worth St.

PHILA. 206 Chestnut St.

J. H. LANE & CO.,

Commission Merchants.

COTTON and JUTE YARNS

110 Worth St., NEW YORK.

24 Kingston St., BOSTON.

151-53 Fifth Ave., CHICAGO.

JAMES E. MITCHELL & CO.,

Commission Merchants.

122 & 124 Chestnut St., Philadelpia, Pa.

51 & 53 Summer St., Boston.

Cotton, Woolen & Worsted Yarns.

All numbers on Hand and Made to Order.

ALEX'R KING & CO.

YARNS.

FINE IMPORTED YARNS A SPECIALTY.

54 Leonard St., New York.

SAWYER, MANNING & CO.,

YARNS,

86 & 88 Franklin St., NEW YORK.

TILLINGHAST, STILES & CO.

COTTON YARNS

ALL NUMBERS.

Chain Warps, Skeins, Cops, Cones, Beams, Spools, Colored and Grey Yarns. Hosiery and Combed Yarns.

20 Market Square, Room 53. Providence, R. I.

BUCKINGHAM & PAULSON,

Commission Merchants

YARN and WARPS.

83 Leonard St., New York.

120 Chestnut St., Philadelphia.

211 Jackson St., Chicago

ROBERT J. WALKER,

2335 Hamilton St., Phila., Pa.

★Star Finishing Works

All kinds of cotton goods finished in the best manner, including Fine Madras Shirtings, Ginghams, Cheviots, Tickings and Cottonades. Refinishing a specialty.

FLEMING & CHAPIN,

YARNS	THREADS	TAPES	BRAIDS
IN Skeins, Warps, Cops, Tubes, Cones,	Combed, Peeler, Egyptian and Sea Island. All Nos. for Manufacturers on Large or Small Spools, also on Cones or Tubes	Stay Bindings, Common and Superfine. Spool Tapes, all Nos. Colors to order.	In Silk, Cotton, and Worsted, for Ribbed Underwear, Jackets, Lace Curtains, etc.

CROCHET LACE EDGING for Ribbed Underwear.

215 CHURCH ST., - - PHILADELPHIA.

M. HEYWOOD & CO.,

BRAIDED COTTON BANDING

of Every Description.

FALL RIVER, MASS.

C. MOORE & CO.,

MANUFACTURERS OF

TWINES, THREADS AND YARNS.

Jacquard Harness Twines of all kinds on hand and made to order.

12 SOUTH FIFTH STREET Philadelphia.

Littlefield Manufacturing Co.

K. K. HOSIERY YARNS, COPS, CONES & SKEINS.

Threads for Spooling. Single and Double Yarns for Silk, Woolen or Cotton Goods.

PAWTUCKET, R. I.

Combined Capital Stock, $2,000,000.00.
WM. D. HOWLAND, TREAS.

Total Spindles, 140,000.
BYRON F. CARD, AGT.

NEW BEDFORD MFG. CO.,
HOWLAND MILLS CORP'N,
ROTCH SPINNING CORP'N.

Single or Twisted, Combed or Carded.
Hosiery Yarns, Chain Warps, Skeins, Spools or Cops, also on Beams from Nos. 10's to 100's.

HIGH GRADE COTTON YARNS.

J. MULLINEAUX, JR., Phila. Agt., 215 Chestnut St.

Byron F. Card, Selling Agent,
NEW BEDFORD, MASS.

GLOBE YARN MILLS — 1881 — FALL RIVER MASS.

Capital $1,200.000. 100,000 SPINDLES.
Weekly product 120,000 lbs. 14's to 160's.

COTTON YARNS
Superior Qualities
SPECIALLY ADAPTED FOR
Silk, Plush, Upholstery and Hosiery MANUFACTURERS.
American Peelers. ✣ Sea Island. ✣ Egyptian Cottons.
Superior Qualities Combed & Carded — Furnished in singles, 2, 3, 4 & 6 ply chain warps, skeins, beams, spools, tubes, cones & Lisle Thread yarns.
COPS FOR WEAVING & TWISTING. COPS FOR HOSIERY.
Arnold B. Sanford, - - Treasurer.

Arnold B. Sanford, *Pres.* Arthur H. Mason, *Treas*
Capital Stock, $400,000.

Sanford Spinning Co.
Fall River, Mass.
30,000 Spindles. Weekly Product, 50,000 pounds 14s to 40s.
Novelty Cotton Yarns
From American Peelers and Egyptian Cottons.
OUR SPECIALTY: Superior qualities of Hosiery Yarns, Natural Shades of Cottons, and in Colors, Jaegers, Mixes and Bleached, Hosiery Cops on Long Tubes, Skeins, Tubes, Cones and Lisle Thread Yarns. Furnished in Carded and Combed Qualities in Singles, 2, 3 and 4 plies.

Hosiery AND Weaving Yarn | ALBERT IVINS GROLL, BOSTON.

CREENE & DANIELS MFG. CO.,
Combed and Carded
Yarns, Threads, Twines and Chain Warps,
Furnished in any manner desired by the trade.
PAWTUCKET, R. I.

HADLEY SPOOL COTTON AND FINE YARNS COMPANY
COTTON SPINNERS.
MILLS AT HOLYOKE, MASS.

SPINNERS OF
FINE COTTON YARNS
30s TO 100s.
Gray, Bleached, or Colored. On cop, in skein on spools, cones or tubes.
Fine Cotton Warps, single and two-ply, in chain, etc.
95 Milk Street, BOSTON.

Wilkes-Barre Lace Mfg Co.
SPINNERS OF
COTTON YARNS.
Double-Carded, Frame-Spun,
Double-Roving, In Skeins.
30s TO 40s, TWO-PLY ONLY.
Wilkes-Barre, Pa.

EGYPTIAN COTTON
HERMAN CAPELLE,
Rothschild Building, Cor. Leonard St. & W. Broadway
NEW YORK.
H. BINDERNAGEL, Alexandria, Egypt.

BARRY, THAYER & CO.,
Cotton Commission Merchants,
32 INDIA ST., - BOSTON.
Special attention given to orders from woolen mills for high grades and Peruvians.

—One of the most attractive reminders in calendar form that we have seen this year comes from the American Soap & Washolene Co., Cohoes, N. Y. It is a form of a glass paper weight, on the face of which is a monthly calendar. By an ingenious arrangement the different months may be changed so that it can be always kept "up to date." The company which sends it out also keeps up to date in furnishing mills with everything that they require in the way of fulling and scouring soaps.

—The Foster Machine Co., of Westfield, have taken an order from the new Rotch Spinning Co., of New Bedford, for six 100-drum cone winders, also for five of these winders from the Columbia Mills, Columbia, N. C.

—Lewis Jones, of Bristol, Penn., is generally overhauling his machinery, and replacing with new to some large extent. In the seamless hosiery he is putting on the Excelsior semi-automatic attachments, by which it is said that the cost of knitting is being greatly reduced. In the underwear department radical improvements, we are informed, are being made.

—George W. Payne & Co., Pawtucket, R. I., are making their share of spooling, coneing, winding and quilling machinery, and are now engaged in some export orders.

oralizing to the market, as it is claimed that this will not help sell the goods. They say, however, that they are going to make up a number of yards for stock.

We quote prices nominally as below:

DOUBLE ROVING WHITE COP YARN.

11s and 12s	16¼ cts.
16s	17½ cts.
20s	18½ cts.
Jaeger and Camels Hair, 10s to 12s	21 cts.

Other colors quoted on application.

Egyptian Combed.	
1/10s to 12s	21 to 22 cts.
1/20s	27 to 28 cts.
1/34s	32 cts.
1/40s	36 to 38 cts.
1/45s to 1/50s	41 cts.

Cones extra price.

ALLEN SEED COMBED.

1/10s	23 to 24 cts.
1/40s	24 cts.
2/40s	37 to 39 cts.

WOOLEN YARN.

Will quote on inquiry, as there is too great diversity to give satisfactory quotation.

WORSTED YARN.

Fine Australian.	
2/24s	.95
2/40s	1.00
2/50s	1.05
2/60s	1.20
Australian.	
2/24s	.93
2/40s	.97
2/50s	1.00
2/60s	1.27 to 1.15
Better than half-blood Australian.	
2/30s	.82
2/40s	.90
2/50s	1.00
Half-blood Domestic.	
2/40s	.85

DOMESTIC.

1/4 Blood,	
2/28s, 24s, 18s	62 cts.
2/32s	67 cts.
3/8 Blood,	
2/32s	70 cts.
2/28s, 24s	70 cts.
1/2 Blood,	
2/22s, 28s	72½ cts.

The Philadelphia Yarn Market.

PHILADELPHIA, Feb. 10, 1894.

Trade has improved considerably, especially in the hosiery line. Prices are consequently somewhat firmer. We quote:

WARPS.

20/1	13 cts.
22/1	13¼ "
26/1	14 to 14½ cts.
20/2	14 to 14½ "
12/2	13 to 13½ "
30/2	19¼ to 20 "

SKEIN.

26/1	13½ to 14 cts.
20/1	13 to 14 "
19/1	13½ to 14 "
4s to 8s soft	12 to 12½ "
10s to 12s hard	12
10s to 12s soft	13 to 14 "
14s hard	12
14s soft	13½ to 14 "
14/2	13 cts.
20/2	14 "

SOUTHERN CONES.

6s to 8s white	13 cts.
10s	14 to 14½ cts.
12s	15 to 15½ "

SOUTHERN COPS.

6s to 8s white	13 cts.
10s to 12s	13½ "
16s	15 "

MIXED CONES.

6s to 8s	15½ to 16 cts.
10 to 12s	16½ to 17 "
15s	17½

SKEINS.

8/3 Carpet Chain	12 cts.
60-yd DR filling	8¼ "
8/3 slack	13 "
9/4	13 "
10s double reel	13 "
16/3 slack	14½ to 15 cts

EASTERN COPS.

26s shuttle	15 to 15½ cts.
40s "	19
6s to 8s Hosiery	13 to 13½ "
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ALL KINDS OF
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SILK YARNS FOR THE HOSIERY, WEAVING AND KNITTING TRADE GENERALLY,
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Importers of European and Asiatic Raw Silk.
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Importer of and Dealer in
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Fast Black a Specialty. Cotton Hosiery Dyeing in all Colors.
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FAST BLACKS
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JEWETT CITY, CONN.

The Riverside Dye Works,
Dyers of Fancy Colors, and a Specialty of an
ABSOLUTE STAINLESS FAST BLACK
on Hosiery, solicit Orders from the Trade. For further information address
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FAST FANCY COLORS.
We make a specialty of dyeing **Mode** and **Tan** shade on hosiery and yarns, as also all other fancy shades. **Colors absolutely fast.** For particulars address
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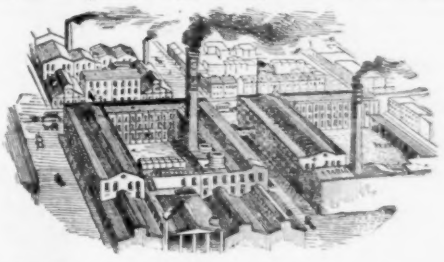
DYERS AND FINISHERS.



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SPECIALTY: The only Diamond Fast Black on Cotton Yarns and Hosiery. Warranted in every particular.

Pawtucket Dyeing & Bleaching Co., BLEACHERS AND DYERS OF
COTTON & COTTON YARNS, STOCKINET & JERSEY CLOTH.
OFFICE WITH BLODGETT & ORSWELL CO., Manufacturers of Glazed Yarns,
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Alizarine Dyes a Specialty.

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WORKS: Hudderfield, Wakefield, Rouen, FRANCE, } ENGLAND, Brooklyn, N. Y.

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ALEX. P. MENDE,
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Manufacturer of Fast Colors and Black Dyes.

We call particular attention to our ONE DIP FULLING BLUE FOR WOOL.
Sample sent on application.

JOHN J. KELLER & CO., 104 MURRAY STREET, NEW YORK.

Sole Agents for JOHN R. GEIGY & CO., Basle, Switzerland

Aniline Colors, Dyewood Extracts, Etc.

Cotton Printing Specialties, Fast One-Dip Cotton Colors, Fast Wool Colors.

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Calleine Blue
Calleine Black
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Faster than
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DYE WOODS, DYE STUFFS AND CHEMICALS.
EXTRACTS OF LOGWOOD. FUSTIC.
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LOGWOOD. FUSTIC. BARK CUTCH.

F. G. PAULY, Pres. I. J. MERRITT, Vice Pres. I. J. MERRITT, Jr., Treas

Harway Dyewood & Extract Manufacturing Co.,
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Importers of Indigo, Cutch, Madder, Chemicals, &c.
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ANILIN OILS. SALTS.
W. C. BARNES & CO., London Manufacturers.
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Branch Houses: BOSTON, 492 496 Atlantic Ave. PHILADELPHIA, 140 So. Delaware Ave. PROVIDENCE, 15 So. Water Street.

COLORS-DYEING.

This department is under the supervision of **Mr. Edward Prag,** and communications intended for it should be addressed to him either at our

Philadelphia Office, 240 Chestnut Street, or **Laboratory,** 2229 Lambert Street, Phila.

Experimental Dye Sheet Recipes for February.

Those manufacturers or dyers among our subscribers who have not received the Dyed Sample Sheet and desire it, will please notify us.

No. 85.

One Dip Black on Wool Yarn.

DYED WITH WOOL BLACK; ALEX. P. MENDE, 14 WATER STREET, NEW YORK.

(100 lbs. of wool.)

Prepare a bath containing,

50% Wool Black.

Boil the bath up, enter wool and boil 1 1-2 hours; then lift, wash and dry.

For the second lot add to the bath 35% of color, and for the third lot of 100 lbs. of wool, add 25 lbs. of color.

The black will be clearer in the second and third dyeing, than the first lot. It is claimed that this black is fast to light and fulling.

No. 86.

Blue Black on Wool Yarn.

DYED WITH FRENCH BLACK; F. E. ATTEAUX & CO., 172-78 PURCHASE STREET, BOSTON, MASS.

(100 lbs. of wool.)

Prepare a mordanting bath containing,

2½% Bichromate of Potash,

1½% Blue Vitriol,

2½% Oxalic Acid.

Boil yarn in this mordanting bath for one hour, then lift and wash thoroughly.

Then prepare a second bath containing

20% French Black,

½% Sulphuric Acid.

Enter wool at 158° F., raise to a boil and boil 1 1-2 hours.

Lift wool, and without washing, enter into bichromate of potash bath 160° F., give four turns. Lift and dry.

No. 87.

Jet Black on Wool Yarn.

DYED WITH FRENCH BLACK; F. E. ATTEAUX & CO., 172-78 PURCHASE STREET, BOSTON, MASS.

(100 lbs. of wool.)

Prepare a mordanting bath containing,

3% Bichromate of Potash,

2% Tartar.

Boil yarn for one hour in the mordanting bath, then lift and wash.

Prepare a second bath containing,

20% French Black,

½% Sulphuric Acid,

1½% Blue Vitriol.

Enter goods at 158° F., raise to a boil, and boil 1 1-2 hours.

Lift, wash thoroughly and dry.

French Black goes on to the fibre very slowly and dyes very level.

No. 88.

Dark Blue on Wool Yarn.

DYED WITH MAZARIN BLUE O; ANCHOR COLOR MFG. CO., 464-66 CHERRY STREET, NEW YORK.

(100 lbs. of yarn.)

Prepare a mordanting bath containing,

3% Bichromate of Potash,

2% Tartar.

Boil the wool in mordanting bath 1½ hours, then lift and wash.

Then prepare a second bath containing,

20% Mazarin Blue O.

Enter wool at 170° F., raise to a boil, and boil 1 to 1 1-2 hours. Then lift, wash and dry.

No. 89.

Red on Wool Flannel.

DYED WITH BRILLIANT RED W.; C. BISCHOFF & CO., 80 FRONT STREET, NEW YORK.

(100 lbs. of flannel.)

Prepare a mordanting bath containing,

3% Bichromate of Potash,

2% Sulphuric Acid.

Boil flannel in mordanting bath for one hour, then lift, and wash.

Prepare a second bath containing,

SCHULZE-BERGE & KOECHL,
Successors to Schulze-Berge, Koechl & Movius,
79 MURRAY ST., NEW YORK.

Sole Agents for the **ANILINE COLORS AND ALIZARINES**

Made by FARBWERKE, formerly MEISTER, LUCIUS & BRUENING, HOECHST a/M.

FAST COLORS for Wool, Yarn and Piece-Goods Dyeing, and Calico Printing

Branch Offices: 138 Milk St., BOSTON, 39 N. Front St., PHILADELPHIA, Pa.

Sykes & Street,
SOLE U. S. AGENTS FOR
St. Denis Dyestuff & Ch. Co.,
PARIS, FRANCE,
ANILINE COLORS, OIL, SALT, ARCHIL, CUDBEAR, &c.
COEZ, LANGLOIS & CO., Havre, France; Dyewood Extracts, &c.
SADLER & CO., England; Alizarine, Oxalic Acid, &c.
85 WATER ST., NEW YORK.
35 India St., Boston. 48 N. Front St., Philadelphia. R. R. Street & Co., Chicago, Western Agents.

3% Brilliant Red W.

Enter flannel at 140° F., run four ends, raise to a boil slowly and boil one hour. Then lift, wash and dry.

No. 90.

Ruby on Wool Yarn.

DYED WITH ARCHILL SUBSTITUTE; W. W. HANNA, 50-52 N. FRONT STREET, PHILADELPHIA, PA.

(100 lbs. of wool.)

Prepare a bath containing,

2% Archill Substitute,

4% Sulphuric Acid,

10% Glauber's Salt.

Enter wool at 150° F., raise slowly to a boil, and boil one hour. Then lift, wash and dry.

No. 91.

Blue on Silk.

DYED WITH LYONS BLUE C P; SYKES & STREET, 85 WATER STREET NEW YORK.

(25 lbs. of silk.)

Prepare an old boiled off soap liquor, broken with a little sulphuric acid and then add,

¼ ounce Lyons Blue C. P.

Enter silk at 125° F., raise temperature to a boil and work silk at this temperature for 40 minutes.

Then lift and revive with sulphuric acid, wash and dry.

This color is not affected by heat nor drying.

No. 92.

Printed Yarn.

THE YARN HAS BEEN PRINTED BY THE AMERICAN YARN PRINTING CO.; 2500 CALLOWHILL STREET, PHILADELPHIA, PA.

No. 93.

Brown on Cotton Yarn.

DYED WITH CHICAGO BROWN B.; JOHN J. KELLER & CO., 104 MURRAY STREET, NEW YORK.

(100 lbs. of cotton.)

Prepare a bath containing.

3% Chicago Brown B.

20% Common Salt.

Enter yarn at 130° F., raise temperature to a boil, and dye at that heat for one hour, lift, wash and dry.

No. 94.

Blue on Cotton Yarn.

DYED WITH VAT BLUE; BEACH & CO., HARTFORD, CONN.

(100 lbs. of cotton yarn.)

Prepare a mordanting bath containing,

3% Tannin

Enter yarn, work the same for three hours, then lift, wring out and prepare a fresh bath containing,

2% Tartar Emetic.

Enter yarn and work for 30 minutes, then lift and wash.

Prepare a new bath containing,

3% Vat Blue.

Enter yarn cold and raise temperature slowly to 150-160° F., and work at this temperature for 1-2 hour. Then lift, wash and dry.

No. 95.

Brown on Cotton Yarn.

DYED WITH CUTCH BROWN G G.; C. BISCHOFF & CO., 80 FRONT STREET, NEW YORK.

(100 lbs. of cotton yarn.)

Prepare a bath containing,

5% Cutch Brown G. G.

8% Soda

25% Common Salt.

Enter yarn at 140° F., raise slowly to a boil and boil for one hour.

Then prepare a second bath containing,

5% Blue Stone.

Enter yarn at the boil and boil for 30 minutes. Then lift, wash and dry

Through the oxidizing process, the brown is rendered fast to sunlight and washing.

No. 96.

Steel Grey on Cotton Yarn.

DYED WITH DIAZO BLACK B: E. SEHLBACH & CO., 77 WILLIAMS STREET, NEW YORK.

(100 lbs. of cotton yarn.)

Prepare a bath containing,

½% Diazo Black B.,

15% Common Salt.

Enter yarn at 130° F., raise temperature to a boil and work yarn at that heat for one hour. Lift, wash and dry.

Turkish Red Dyeing.

Jan. 25th, 1894.

Textile Mfg. World.

Dear Sirs: Looking over the last issue of the TEXTILE WORLD I saw the process of a turkish red dyeing as used at the present time in France, and thinking that this process was translated from a German contemporary for the purpose of giving advice to people who are interested in turkey reds, I beg to say, that the addition of turkey red oil to the dyebath, is always done at the expense of alizarine, as by turkey red oil some of the alizarine is kept in solution, and of no use for dyeing.

It is advisable to omit the red oil and to dye the cotton simply in the alizarine bath under known conditions.

Furthermore in preparing the basic alum mordant, the amount of soda given in the process is much too high, as 16 parts of soda (100 per cent.) are sufficient to 100 parts of sulphate of alumina for a good basic mordant. Soda solution is to be added slowly, viz. the precipitated oxyde of alum must be dissolved before further addition of soda.

After fixing the mordant with chalk or phosphate of soda, it is not only loss of time to have the cotton dried before dyeing, but by doing so, the dyer runs the risk of having the yarn dyed unevenly.

DR. E. B.

Big Dividends.

An interesting portion of Consul General Mason's, Frankfort, Germany, report to the State Department is that which touches upon the subject of the manufacture of aniline dyes. The Farbwerke, a large manufactory of aniline colors and chemical products at Hoechst, near Frankfort, declared a dividend of 26 per cent. on its capital of 15,000,000 marks; the aniline and chemical works of Heinrich Baeyer, at Elberfield, will repeat its last year's dividend of 18 per cent.; and the Badische Aniline and Soda Fabrik, at Ludwigshaven, near Mannheim, is equally prosperous. And yet all of these companies suffered more or less from the serious prostration of their American export trade during the third quarter of the present year, but from which it is now rapidly recovering.

It is well understood that in all the standard aniline dyes, the manufacture of which is open to general competition, prices have been reduced to very close margins during recent years; but the prosperity of that branch of business is well maintained by the large profits derived from special patented colors and medicinal preparations, of which each of the large German chemical firms owns a number that are patented in its own name in the United States, thus securing to the patentee a monopoly of its production and sale.

EDWARD HILL'S SON & CO.,
25 and 27 CEDAR STREET, NEW YORK,
CUTCH, OXALIC ACID, CAUSTIC POTASH,
Blue Vitriol, Carb. Potash,
Chlorate of Potash, Caustic Soda, Arsenic, Shellac,
Ceylon and Cochin Cocoanut Oil.

WELCH, HOLME & CLARK CO.,
383 WEST STREET, NEW YORK,
Importers of Celebrated "Golden Fleece" Extra Refined. Concentrated 98 per cent.

Powdered Caustic Soda.

MORO PHILLIPS CHEMICAL CO., 131 So. Third St., PHILADELPHIA.
Acids, Glauber Salts, Aqua Ammonia.

COPPERAS in car loads or less; in barrels or bulk.
The S. P. WETHERILL CO.,
925 Chestnut St., - Philadelphia, PA.

ZELLNER BROTHERS,
213-215 S. FRONT ST., - PHILADELPHIA, PA.
A PERFECT COTTON SOFTENER
THE PERFECT SAVONITE TRADE MARK REGISTERED COTTON SOFTENER.
KALONITE
A PERFECT WOOL SCOURER
Prices and further information furnished on application.

CHAS. A. JOHNSON & CO.,
Successors to J. C. Bloomfield & Co.
Dealers in
Dyestuffs & Textile Trade Supplies.
Detergent for Bleaching, a substitute for soda ash, a specialty.
14 Dey Street, New York.
29 Weybosset St., Providence, R. I.

Roundabout Notes.

For the Textile Mfg. World.

DYEING, PRINTING, BLEACHING AND FINISHING.

Read Halliday & Sons have added several new colors to their important Titan group of dyestuffs. Titan orange is just out; this is the first mention of it in the technical press of this country. It gives a fine bright shade of orange with two per cent. It is fairly fast to light, and very fast to soaping. Titan gold is a good level dye for cotton, giving a beautiful gold shade of brown. Two new brands, S and R, have been added to the well known Titan Como G, by far the greenest and brightest self-color blue ever produced. The two new brands give redder shades, fast to soaping and alkalies. It was in 1890 that Messrs. Halliday patented the first of this group, Titan pink, and already the Titan colors are a perfect armory for the dyer, giving, alone and in combination, a perfect gamut of shade.

***

It has been pointed out that the Mikado dyes are capable of being diazotized and that the results are good. A wide range of shade can be gotten by using the various developers, and the colors obtained are very fast. A simple nitrite bath followed by a boiling in soda, gives still another range of color. The success of the developing process and the importance of the results obtained, will undoubtedly lead makers to try experiments with other groups.

***

A new method of producing fast colors on silk, has been patented in Italy, and this is the first account of it that appears in the English language. Primuline is the dyestuff employed.

The washed silk is treated in a bath of eight grammes of fish-glue to a litre of water for an hour at 20 deg. C. It is well rinsed and passed into a bath of weak hydrochloric acid and from thence passed through three baths, of dye, developer and diazotizer. These for the sake of clearness will be spoken of as *A*, *B* and *C*.

A is a mixture of primuline and soap, and for light shades the temperature is kept at 30 deg. C., for medium at 50 deg. C., and for dark the goods are kept for an hour at 100 deg. C. Salt and sal-ammoniac are added to the bath in proportions rather mysteriously stated as varying from 0 to 15 per cent. There seems room for experiment here, but in any case copper vessels must not be employed. After this bath, the silk is washed, wrung and washed again.

B is the diazotizing bath of nitrite of soda and acetic acid in proportion to the amount of primuline in the dye-bath; eight grammes per litre of the former and four of the latter is stated as the maximum dose, the smallest proportion of these ingredients being employed for the production of the lightest shades. The sooner the silk is placed in the bath after mixing these reagents, the redder the shades that are produced, and therefore when reddish tints are not desired, the bath must be given a little time to throw off its nitrous fumes. Acid in excess, will injure the fibre of the silk, whereas nitrite in excess, although it will retard the operation, will render the dyeing more even. The moral of this is obvious. This bath, *B*, of course is cold, and the inevitable washing follows it.

C is the developing bath. Any of the usual developers, alone or in combination, may be used, and they give a great variety of shades. This is also a cold bath, and following it the goods are washed once more, cleared with acetic acid and soaped again if neccessary. If there is a need of a further soaping, however, the dyer should be careful that no trace of the alkalinity of the develping bath is present in the fibre.

***

A billiard table requires in its cloth a superlative fastness to rubbing, and a very fair resistance to light. Moreover the green to be dyed must have a good level penetrating power, as the cloth is very thick and solid. We give recipes for five greens, ranging from the lightest to the darkest shade in use for this purpose. In each case the goods are dyed at the boil for two hours, in a bath containing 20 lbs. Glauber's salt and 4 lbs. sulphuric acid. The cloth, (and of course these proportions refer to 100 lbs. of material), does not exhaust the Glauber's salt, and the second batch needs only half the amount.

1

1 lb. 3½ oz. patent blue N,
9½ oz. naphtol yellow S,

2

1 lb. 8 oz. patent blue N,
8 oz. naphtol yellow S,

3

1 lb. 13 oz. patent blue N,
5½ oz. naphtol yellow S,

4

2 lbs. patent blue V,
5½ oz. naphtol yellow S,

5

1 lb. 4 oz. patent blue V,
8 oz. Victoria yellow conc.

A little experiment in the variation of these proportions, will give every shade of billiard green that has ever been used—or ever will be.

***

A speedy way of bleaching out stains in woolen apparel has been hit upon by a French chemist. After ordinary washing, the shirt, or other article, is steeped for a few minutes in a mixture of four parts of hydrochloric acid, one part of sulphurous acid and 100 parts of water. When made, the bath should be of one deg. Tw. strength.

***

It is rather discouraging to find that an article with a good name to it, appearing in the "Farber Zeitung", and recommending the direct dyestuffs as mordants for the indirect, is pooh pooh'ed in the same journal by another light of the science of dyeing. This gentleman notes that direct and indirect colors in combination will not form an insoluble lake, and that in fact the second color adds a mere shading to the first. In the second bath, many substantive colors would bleed, and in fixing basic colors would be inferior to tannin. The idea is evidently not making headway, says the critic, for tannin is in as good demand as ever in Germany.

Glue is mentioned as a good fixing material for tannic acid. If yarn is steeped in a tepid four per cent. solution of glue, and passed through a two per cent. bath of tannic acid and dyed in the usual manner with magenta, the result is as good and considerably cheaper than if antimony were used as a mordant.

Practice and Principles of Wool Dyeing.

The various processes used for wool dyeing, are based on certain principles and the obtaining of good results depends upon the exact carrying out of these principles. The carrying out of these principles is very often neglected and naturally the result of the dyeing is not satisfactory.

It is hardly necessary to state that all dye methods for wool, cotton, silk or any other material should be in harmony with the nature of the fibre and the dyestuff to be used.

The treatment of wool naturally differs materially from the treatment of cotton, and the process used for the latter would be very inappropriate for wool or silk.

Wool has the property to a high degree of resisting the action of acids, so that there is no danger in treating the same with strong acids; whereas it is very succeptible to alkalies. Caustic alkalis will dissolve wool very quickly and naturally cannot be used for wool dyeing.

Carbonates have not quite such extreme action upon wool, and can be used to a certain extent in a medium strong solution.

Soap will not act injuriously upon wool fibre and can be used in the dye-bath, as also for cleaning. Ammonia has no action upon the wool fibre and can be used instead of soap.

Wool has a tendency to felt or mat whenever it is worked or turned too much when the bath is boiling or at a high temperature, and on account of these conditions the wool should not be turned too often when the bath is at a high degree of heat.

Alkalies, also strong soap solutions, have the tendency of felting the wool, whereas ammonia is not quite so dangerous. Acid, on the contrary, prevents the felting of the wool; alkaline salts such as glauber's salt are very benificial to wool dyeing and have no action upon the felting of the wool.

Another important factor is the nature of the dyestuffs to be used for dyeing.

It is natural that dyestuffs which have a great affinity to the fibre, such as saffrinine and fuchsin, have to be treated with a different method than such dyestuffs which go slowly on to the fibre, such as alizarine.

To produce clear, fast shades, it is absolutely necessary that the above observations, though they might appear trifling to the dyer, are carried out to the letter. The neglect of these small matters in dyeing, causes a great deal of trouble.—Centralblatt f. d. T. I.

A New Indigo Vat.

A new and improved indigo vat will be introduced to the American market by Messrs. Read Halliday & Sons, Limited, 7 Platt Street, New York.

The vat will dye wool or cotton and it is claimed for it that the cost is one-third cheaper than the ordinary vat now in use.

"The Cleaner and Dyer"

Has changed its name and has assumed the patriotic name of "The American Dyer."

The journal is published by Mr. F. J. Bird, 2142 Columbia Ave., Philadelphia, Pa.; and we hope with the adoption of its new name, the journal will enlarge its field of usefulness. Success to "The American Dyer!"

New Sample Cards.

Messrs. John J. Keller & Co., 104 Murray Street, New York, has issued two more pretty sample cards, displaying a great number of fine colors.

One sample card contains sixty shades on wool, dyed with chrome blue 3 R, P E, B B, 3 B, 2 R, R, B N, P, chrome brown, fustic crystals, etc. The card displays some very fine silver grays, browns, greens, mode, black and various combination shades, all of which are claimed to be fast to air, light and fulling.

The second card also displays sixty most beautiful shades of reds, pinks, violets and greens, some dyed in an acid and some dyed in a neutral bath.

Those dyers who have not received these cards, should apply for one to the above firm.

Indian Dyestuffs.

Messrs. Hummel and Perkins have recently made public their experiments on the dyeing properties of two Indian dyestuffs. One is derived from the plant *Rubia Sikkimensis*, the other is derived from the chay root.

The following we take from above gentlemen's report: The *Rubia Sikkimensis* is found in Sikkim, upon the Khasia and Naga hills, where it forms one of the mercantile articles in the bazaar of the Darjiling, where it is most of the time mixed with the munjeet root (East India madder), which comes from the related plant, *Rubia Cordifolia*. The root of the above plant is used in Manipur in the same way as madder is used as a red dyestuff.

"The experiments made in the Yorkshire College proved that the root purpurin contained a small amount of munjistin, a substance which Stenhouse proved to be in the root *Rubia Munjista*, purpurbanthin, and a small quantity of red dyestuff, which gives a similar shade to purpurin.

The root resembles, as was expected, the munjeet root, as both plants are botanically very nearly related.

The chay root, or the Indian madder, originates from the *Oldenlandia rumbellata*, a plant which belongs to the same family as madder, munjeet, etc.

This root is principally sold in Madras at about nine cents per English pound, and used to dye a red similar to the nature of Turkish red.

The chay root has been known for a longer time. Bancroft made mention of the same in his work, "Philosophy of Permanent Colors," published in 1813. Still the root was not used in Europe.

According to the experiments of Messrs. Hummel and Perkins, the root contains alizarin, a product known as chlorubin, some yellow, crystallic bodies, which proved to be anthragallol-ether, and which for the first time were won from the natural source.

They can be extracted by means of sulphurous acid.

Dye experiments and comparative tests after soaping proved that the dyeing properties are as strong as those of madder.

Though madder possesses a deeper color before soaping than the color obtained from the chay root, the latter, however, resists soaping better than madder.

The red and pink shades obtained from the chay root possess a bluer cast than madder; the purple tones are better, fuller, and more brilliant, and look as if produced with the actual pure alizarin. The Turkish red from the chay root is also bluer than madder; it resists soaping and washing better, in which it compares with alizarin red.

The chay root contains no purpurin, whereas there seems to exist from 33 to 35 per cent of alizarin.

—Messrs. Whitney & McDuff, the linen thread manufacturers at Millbury, Mass., whose large additions of machinery we reported several times, are running full time. All the new additional machinery is now in position and part of it is running; the remainder will be started when trade improves. They make every variety of thread for shoe manufacturers uses. Mr. Daniel McDuff is superintendent, as well as partner.

—The Millbury Cotton Mills, 11,600 spindles, are running full time on print cloths.

—The Cordis Mills, Millbury, Mass., are now running full time on tickings. The superintendent complains of unsatisfactory business, however, and of the poor and uncertain outlook. During August and September these mills were shut down and a reduction of 10 per cent. was made in the wages when starting up.

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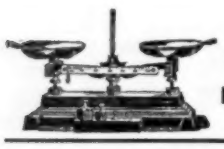

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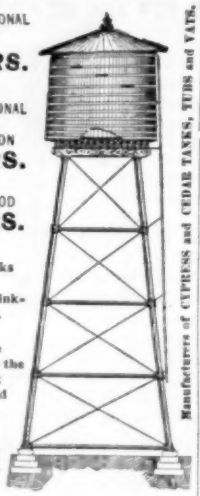

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—Charles Abrams, who lately succeeded Thomas Bolderson as overseer of weaving in the Manchester Print Works, Manchester, N. H., has resigned and is succeeded by Mr. Campbell, of Lawrence, Mass.

—Mr. Woods, of Nashville, Tenn., succeeds Frank Smith, resigned, as overseer of weaving in the Stonewall mills, Stonewall, Miss.

—John Tierney succeeded Joseph Schofield, who resigned on account of ill health, as second hand of the machine room in the Manchester Print Works, Manchester, N. H.

—E. Pilling, manager of the Aspinock Knitting Mill, has resigned.

—Walter G. McRae has again assumed the superintendency of the Wilmington Cotton Mills, Wilmington, N. C.

—At a recent meeting of the Willimantic Linen Co., Lucius A. Barlow was elected president and treasurer, A. C. Dunham, vice-president and E. H. Clark secretary.

—B. W. Bean, superintendent of the Eddystone Print Works, died at his residence in Chester, Pa., on January 24th, aged 60 years.

—Frank Smith, for the past fourteen years overseer of weaving in the Stonewall Mills, Stonewall, Miss., has resigned.

—Henry F. Drebing, manager of the Davenport Woolen Mills, has resigned.

—Mr. Foss has resigned as superintendent of the Saccarappa Hosiery Co., Westbrook, Me.

—Thomas M. Clark has resigned the superintendency of the Sawyer Woolen Mills, Dover, N. H.

—J. M. Spratt has resigned as treasurer of the Fort Mill Mfg. Co., Fort Mill, S. C., B. D. Springs is his successor.

—Hall Gleason, of Boston, Mass., has been secured by the Toledo Cotton Mill Co., to superintend the mills, at Maumee, O., Timothy Riley, of that place, will be his assistant.

—Allen Van O'Linda has resigned his position as assistant superintendent of the Waterford, N. Y., Knitting Co's mill, and accepted a position in the Atlantic Knitting Mill, Cohoes, N. Y.

—A. L. Murray, formerly overseer of carding in the Guilford Cotton Mills, Greensboro, N. C., has accepted a similar position in the Orange Cotton Mills, Orangeburg, S. C.

—Fred Lacy, designer in the Greylock Mills, Greylock, Mass., has been promoted to superintendent.

—William Taylor has resigned his overseership in the Glendale Elastic Fabric mill, Easthampton, Mass., on account of ill health.

—John W. Kidd has resigned as overseer of cloth room with the D. E. Convense Co., Glendale, S. C., and accepted the management of the Arlington Mills, Arlington, S. C

—Irving Johnson is in charge of dyeing at the Howarth Mill, Rockdale. Mass., during the absence of W. C. Robinson in England.

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Of dyes, chemicals, fibres, etc.
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COMPARATIVE TARIFF SCHEDULES,

Showing the Proposed New Tariff Schedule as it Passed the House of Representatives and was Sent to the Senate, Compared With the McKinley Schedule of 1890, and the Tariff of 1883.

SCHEDULE I.--MANUFACTURES OF COTTON.

	TARIFF OF 1883.	M'KINLEY DUTIES.	PROPOSED NEW SCHEDULE.
Cotton thread, yarn, warps or warp yarn:			
Valued not above 25c per lb	10 cents per pound	10 cents per pound	30 per cent.
do do 40c do	15 do do	18 do do	35 do
do do 50c do	20 do do	23 do do	40 do
do do 60c do	25 do do	28 do do	40 do
do do 70c do	35 do do	33 do do	40 do
do do 80c do	38 do do	38 do do	40 do
do do $1.00 do	48 do do	48 do do	40 do
do above $1.00 do	50 per cent.	50 per cent.	40 do
Cotton cloth not bleached, dyed or colored, etc., not exceeding fifty threads to sq. in.	2½ cents per square yard	2 cents per square yard	1 cent per square yard.
If bleached	3½ do do	2¾ do do	1¼ do do do
If dyed, colored or printed	4½ do do	4 do do	2 do do do
Exceeding fifty and not exceeding one hundred threads to the square inch, unbleached	2½ do do	2½ do do	1¼ do do do
If bleached	3½ do do	3 do do	1½ do do do
If dyed, colored, printed, etc.	4½ do do	4 do do	2¼ do do do
Not bleached, dyed, colored, printed, etc., valued above 6½c square yard		35 per cent.	20 per cent.
Bleached, valued above 9c square yard		35 do	25 do
Dyed, colored or printed, valued above 12c square yard		35 do	30 do
Cotton cloth, unbleached, exceeding 100 and not exceeding 150 threads to the square inch	3 cents per square yard	3 cents per square yard	1½ cents per square yard.
If bleached	4 do do	4 do do	2¼ do do do
If dyed, colored, printed, etc.	5 do do	5 do do	3¼ do do do
Not bleached, dyed or printed, valued above 7½c square yard	40 per cent.	40 per cent.	25 per cent.
Bleached, valued above 10c square yard	40 do	40 do	30 do
Dyed, colored or printed, valued above 12½c square yard	40 do	40 do	35 do
Cotton cloth, not bleached, exceeding 150 and not exceeding 200 threads to the square inch	3 cents per square yard	3½ cents per square yard	2 cents per square yard.
If bleached	4 do do	4½ do do	2¾ do do do
If dyed, colored, printed, etc.	5 do do	5½ do do	4¼ do do do
Not bleached, dyed or printed, valued above 8c square yard	40 per cent.	45 per cent.	30 per cent.
Bleached, valued above 10c square yard	40 do	45 do	35 do
Dyed, colored or printed, valued above 12c per square yard	40 do	45 do	40 do
Cotton cloth, not bleached, dyed, colored or printed, exceeding 200 threads square inch	4 cents per square yard	4½ cents per square yard	3 cents per square yard.
If bleached	5 do do	5½ do do	4 do do do
If dyed, colored or printed	6 do do	6½ do do	5¼ do do do
Not bleached, dyed or colored, valued above 10c per square yard	40 per cent.	45 per cent.	30 per cent.
Bleached, valued above 12c square yard	40 do	45 do	35 do
Dyed, colored or printed, valued above 15c sq. yd.	40 do	45 do	40 do
All cotton cloth containing an admixture of silk not otherwise provided for		10c per sq. yd. & 35 per ct.	40 do
Stockings, hose, half hose, shirts and drawers valued not above $1 50 per dozen not otherwise provided for	35 per cent.	35 per cent.	30 do
Stockings, hose and half hose, including seamless stockings, fashioned:	40 do		
Valued not above 60c per dozen pairs	40 do	20c per doz. pairs and 20 per cent.	40 do
do do $3 do do	40 do	50c per doz. pairs and 30 per cent	40 do
do do $4 do do	40 do	75c per doz. pairs and 40 per cent.	40 do
do above $4 do do	40 do	$1 per doz. pairs and 40 per cent.	40 do
Shirts and drawers, value above $1.50 per dozen, and not above $3 per dozen	40 do	$1 per doz. and 35 per cent.	40 per cent.
Above $3 per dozen	40 do	$1.25 per doz. and 40 per cent.	
do $5 do	40 do	$1.75 per doz. and 40 per cent.	
do $7 do	40 do	$2 per doz. and 40 per cent.	
Cotton cords, braids, boot, shoe and corset lacings	35 per cent.	35 cents per pound	35 per cent.
Cotton webbing, goring, suspenders, braces, gimps and galloons	35 per cent.	40 per cent.	35 do
Spool thread, per dozen spools for every 100 yards	7 cents	7 cents	4½ cents.
Clothing, ready made of cotton or other vegetable fibre	35 per cent.	50 per cent.	40 per cent.
All such having India rubber		50 cents per pound and 50 per cent.	40 do
Cotton laces, damask embroideries, insertings, trimmings, lace window curtains, etc.	40 per cent.	40 per cent.	40 do
Hemmed handkerchiefs	40 do	50 do	40 do
Plushes, velvets, velveteens, corduroys and all pile fabrics of cotton or other vegetable fibre.	35 do		
Not bleached, dyed, colored, etc.		12c per square yard and 20 per cent.	35 per cent
If bleached, dyed, colored, stained, etc.		14c per square yard and 20 per cent.	40 do
Chenille curtains, table covers and all goods of cotton chenille or other vegetable fibre		60 per cent.	40 do
Neckties or neckwear	35 per cent.	50 do	40 do
All manufactures of cotton not specially enumerated	35 do	40 do	40 do

SCHEDULE K.--WOOL AND MANUFACTURES OF WOOL.

	TARIFF OF 1883.	M'KINLEY DUTIES.	PROPOSED NEW SCHEDULE.
*Wool and hair: carpet, valued not above 13c	2½ cents per pound	32 per cent.	
do carpet, valued above 13c	5 do do	50 do	
do clothing, valued not above 30c	10 do do	11 cents per pound	Free.
do clothing, valued above 30c	12 do do		
do combing, valued not above 30c	10 do do	12 cents per pound	
do combing, valued above 30c	12 do do		
Woolen rags, mungo and flocks	10 do do	10 do do	15 per cent.
Shoddy and waste	10 do do	30 do do	15 do
Noils		30 do do	15 do
Tops, ropings and rovings		Same as manufactures of wool	25 do
Woolen and worsted yarns, value not above 30c per lb.	10c and 35 per cent.	2½ times the duty on wool of the 1st class and 35 per cent.	30 do
Valued not above 40c per pound	12c do do	3 times the duty on wool of the 1st class and 35 per cent.	30 do
Valued above 40c per pound		3½ times the duty on wool of the 1st class and 40 per cent.	35 do
do not above 60c do	18c and 35 per cent.		
do not above 80c do	24c do 35 do		
do above 80c do	35c do 40 do		
Woolen cloths and all manufactures of wool not specially enumerated; also shawls and knit goods, McKinley tariff and new bill:			
Valued not above 80c per pound	35c do 35 do		*40 per cent.
do above 80c per pound	35c do 40 do		
do not above 90c per pound		3 times the duty on wool of the 1st class and 35 per cent.	*40 per cent.
do above 90c per pound		3½ times the duty on wool of the 1st class and 40 per cent.	*40 do
do above 40c per pound		4 times the duty on wool and 50 per cent.	*40 do
Worsted cloths and all manufactures of worsted, not specially enumerated:			
Valued not above 30c per pound	10c per lb. and 35 per cent.	3 times the duty on wool of the 1st class and 35 per cent.	*40 do
do do 40c do	12c do do 35 do	3½ times the duty on wool of the 1st class and 40 per cent.	*40 do
do above 40c do		4 times the duty on wool of the 1st class and 50 per cent.	*40 do
do not above 60c do	18c do do 35 do		
do do 80c do	24c do do 35 do		
do above 80c do	35c do do 40 do		
Blankets, flannels for underwear and hats of wool (also knit goods in 1883), paper makers' felts:			
Valued not above 30c per pound	10c do do 35 do	1½ times the duty on wool of the 1st class and 30 per cent.	25 per cent.
do do 40c do	12c do do 35 do	2 times the duty on wool of the 1st class and 35 per cent.	30 do
do do 60c do		3 times the duty on wool of the 1st class and 35 per cent.	35 do
do above 30c do		3½ times the duty on wool of the 1st class and 40 per cent.	35 do
do not above 60c do	18c do do 35 do		
do do 80c do	24c do do 35 do		
do above 80c do	35c do do 40 do		

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XXX OLIVE SOAP. PERFECTLY PURE. In Chips, Bars, and Solid.
Is praised by all Dyers who have used it. Manufactured by the
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SCHEDULE K.—WOOL AND MANUFACTURES OF WOOL—CONTINUED.

	TARIFF OF 1883.	M'KINLEY DUTIES.	PROPOSED NEW SCHEDULE.
Weighing over 4 ounces per square yard			40 per cent.
Women's and children's dress goods, Italian cloths and coat linings, composed in part of wool (in McKinley bill cotton warp goods):			
Valued not above 20c per square yard	5c per sq. yd. & 35 per ct.		40 per cent.
Valued above 20c per square yard	7c do do 40 do		40 per cent.
do not above 15c do do		7 cents and 40 per cent.	
do above 15c do do		8 do do 50 do	40 do
All such goods weighing over 4 oz. per square yard		4 times the duty on wool of the 1st class and 50 per cent.	40 do
Women's and children's dress goods, Italian cloths, coat linings, bunting, etc., composed wholly of wool (if containing an admixture of cotton or silk, in the McKinley bill)	9c per sq. yd. & 40 per ct.	12c sq. yd. and 50 per ct.	40 do
All such goods weighing over 4 oz. per square yard	35c per lb. and 40 per cent.	4 times the duty on wool of the 1st class and 50 per cent.	40 do
Bunting	10c per sq. yd. & 35 per ct.		
Ready-made clothing	40c per lb. and 35 per cent.	4½ times the duty on wool of the 1st class and 60 per cent.	45 do
Plushes and other pile fabrics, felts and felt fabrics		4½ times the duty on wool of the 1st class and 60 per cent.	45 do
Cloaks, dolmans, jackets, etc., and other outside garments for ladies and children	45c per lb. and 40 per cent.	4½ times the duty on wool of the 1st class and 60 per cent.	45 do
Webbings, goring, suspenders, braces, beltings, bindings, braids, galloons, fringes, gimps, etc.	30c do do 50 do	60c per lb. and 60 per ct.	
Carpets: Aubusson, Axminister and Chenille	45c per sq. yd. & 30 per ct.	60c per square yard and 40 per cent.	40 do
Saxony, Wilton and Tournay velvet	45c do do 30 do	60c per square yard and 40 per cent.	35 do
Brussels	20c do do 30 do	44c per square yard and 40 per cent.	30 do
Felt carpets		11c per square yard and 40 per cent.	30 do
Patent velvet and tapestry velvet	25c do do 30 do	40c per square yard and 40 per cent.	30 do
Tapestry Brussels carpets	20c do do 30 do	28c per square yard and 40 per cent.	30 do
Treble ingrain and three ply, etc.	12c do do 30 do	19c per square yard and 40 per cent.	30 do
Yarn Venetian and two ply ingrain	8c do do 30 do	14c per square yard and 40 per cent.	Venetian, 25 per cent; Two-ply 25 per cent.
Druggists and bockings	15c do do 30 do	22c per square yard and 40 per cent.	25 per cent.
Mats, rugs, screens, covers, hassocks, etc.	Same as carpets of like character.	Same as carpets of like character.	Same as carpets of like character.
All other mats, screens, hassocks and rugs	40 per cent.	50 per cent.	
Carpets of wool, flax or cotton, not especially enumerated	40 do do	50 do	25 per cent.

*In all rates of duty in the woolen schedule, except on carpets, there is to be a reduction of 1 per cent. annually for 5 years beginning on July 1st, 1896.

It is provided that the enactment of the new schedule of duties on manufactures of wools shall not go into effect until Dec. 2, 1894. Wool is to be admitted free on Aug. 1, 1894, if the bill passes before that date.

Brilliant Cyanine Blue G Paste.

This is a new dyestuff, which will interest dyers for many reasons.

When this new dyestuff came into the trial dye house for the first time from the laboratory, its great clearness was immediately noticed. On further testing, it was found to be fast to alkalies and acids, which two properties very few blues possess together, some being fast to alkali and not to acids, and vice versa.

The light tests proved that the new dyestuff was equal to the best Alizarine Cyanine Blues in this respect.

After the superficial tests had been made, the dyers went more into detail. At first they tried various mordants:

Bichromate of Potash with Sulphuric Acid,

Bichromate of Potash with Tartar,

Bichromate of Potash with Oxalic Acid,

Fluoride of Chrome with Oxalic Acid.

The differences obtained with these various mordants were only slight; the Bichromate of Potash with the Oxalic Acid produced the clearest shades, and the best results were obtained with the proportion of two parts Bichromate of Potash to one part Oxalic Acid. Fluoride of Chrome produced slightly duller shades, but the difference was very trifling. As Bichromate of Potash was the cheapest, there was no question that this was the best to recommend.

It was found that 1-2 of the amount of mordant usually necessary would answer for this new dyestuff to produce absolutely fast colors.

Two per cent. Bichromate of Potash and one per cent. Oxalic Acid are quite sufficient, even for the very darkest shades.

After this the dyers experimented to find the difference produced by Acetic Acid and Sulphuric Acid in the dye bath, with the undoubted result that the shades produced with Sulphuric Acid are very much heavier and stronger than those produced with Acetic Acid. But this only arises from the fact that when Sulphuric Acid is used in the dye bath, more coloring matter is fixed on the surface of the fibre, in other words, the goods are not dyed through very well.

It was also immediately noticed that goods dyed in this way (with Sulphuric Acid) are not as fast to light as those dyed in the same way with Acetic Acid in the dye bath.

The explanation of this fact was soon found. Brilliant Cyanine Blue G Paste can also be dyed without a chrome mordant, like an acid dyestuff, according to which method it produces a dark reddish blue. This shade is not fast to alkali, and is also very much more sensitive to light than the chrome lake.

When Sulphuric Acid is used in the dye bath (the goods having previously been mordanted with chrome and Oxalic Acid) the chrome lake is only partially formed, a large part of the unchanged dyestuff is on the surface of the fibre, and on account of its reddishness, makes the shade appear darker, and fades quicker when exposed to light.

The chrome lake, when produced with Acetic Acid in the dye bath, however, is so fast to light, that cloth dyed with ten per cent. dyestuff and exposed outside from the middle of March to the middle of September, the whole summer, which especially this year was rich in sunlight, had hardly changed any.

There are probably very few dyestuffs which show such a large difference between the ordinary sour dyeing and their chrome lake, which shows that Brilliant Cyanine Blue G Paste is a mordant dyestuff par excellence.

After these experiments, the dyers returned to Acetic Acid with their trials. Now another difficulty arose. Often the dyestuff rushed on to the fibre too quickly and produced uneven results. But, as Brilliant Cyanine Blue G Paste was found to produce remarkably even results, when used in the ordinary acid bath, the way out of this trouble was clear; dye sour with Acetic Acid and subsequently add Fluoride of Chrome to the same bath. This process produced excellent results. Bichromate of Potash cannot be used for adding to the sour dye bath. Now this one dip process, however, in spite of its simplicity, has one drawback; it is very difficult to match, if one has not always to produce exactly the same shade. For this reason it was necessary to find a two-bath process which would give good results.

A great number of experiments showed that unevenness was without exception always produced when from any cause whatever the dyestuff which was in the dye bath, was precipitated from same.

Brilliant Cyanine Blue G Paste, namely, is soluble in hot water, but will precipitate from same in crystals as soon as the solution becomes cold. These small crystals are deposited on the cloth, and if the dye bath is then boiled, lake formation quickly sets in before the crystals have a chance to redissolve, and dark spots result wherever the crystals were deposited, consequently, it was only necessary to prevent the dyestuff from precipitating, in other words, to continually keep same and the dye bath sufficiently hot. From this resulted the very simple recipe, to dissolve the dyestuff in a boiling dye bath and to enter the goods at the boil.

A very large number of experiments have invariably produced absolutely even results when the cloth was entered at the boil. Consequently, what with other dyestuffs must generally be strictly avoided, is necessary in this case. The dyestuff is easily soluble in boiling water, and consequently goes on slowly and evenly. If the Acetic Acid is not added in the beginning, but after the goods have first been boiled for 15 or 20 minutes in a neutral dye bath, the thickest and hardest cloths will be perfectly penetrated and absolutely even.

After all this, a number of trials were made on a larger scale in various dye works with different kinds of water, which brought to light another interesting phenomenon. A small percentage of lime in the water is of advantage, because the dyestuff will then go on to the fibre more slowly. But, if the percentage of lime in the water increases, a lime salt is formed (just as with Alizarine Blues) which does not decompose any more. Consequently, a part of the dyestuff is lost. It was an easy matter to overcome this by precipitating the bulk of the lime in the shape of a non-injurious combination, by adding to the dye bath at the very beginning from 10 to 20 per cent. glauber salt, according to the hardness of the water, and by boiling this up before adding anything else. The lime is thus precipitated in the shape of a perfectly innocent fine deposit.

The result of all these experiments is the following recipe:

When Brilliant Cyanine Blue G Paste is dyed alone, chrome in the usual way with 2 to 2 1-2 per cent. Bichromate of Potash, and 1 to 1 1-4 per cent. Oxalic Acid. (For very light shades, such as pigeon blues, less will answer.) Always use exactly 1-2 as much Oxalic Acid as chrome; rinse thoroughly. Now boil the dye bath for five minutes with 10 to 20 per cent. glauber salt (more does no harm). After this dissolve the dyestuff in the dye bath itself by passing it through a sieve; rake and enter the goods at the boil. After 15 to 20 minutes, add two per cent. Acetic Acid. If the material to be dyed is very difficult to penetrate, it is advisable to add only one per cent. Acetic Acid at first, and after this last has been in from 30 to 40 minutes, the other one per cent. After boiling 1 1-2 to 2 hours, rinse well and dry. This process has always resulted in absolute satisfaction.

E. E.

(To be Continued.)

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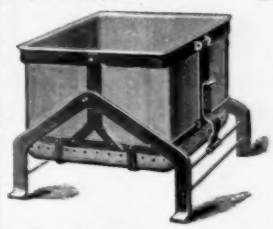

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The Knit Goods Situation.

An improvement is noticeable in the general tone of trade, over a month ago. The season for it is rather hard to determine as the principal causes which are looked upon as having an effect on trade remain practically the same. One great factor in improving the situation is the great cheerfulness of the people. The depression has lasted so long and markets on all lines of manufactures have become so bare that many manufacturing plants seem to find it advisable to start operations or, where already in operation, to increase their working hours. With every slight improvement in this respect the people in general take new hope, and by this very hope an impetus is given to affairs which helps still more to make the outlook somewhat brighter.

We believe, however, that any substantial improvement is less noticeable in the knitting or woolen industries than in trade in general.

UNDERWEAR.

While a slight improvement is noticeable in general business, yet the impression is expressed with a full knowledge of the fact, that the underwear market was never so dull and a picking up of trade need be but very slight indeed in order to create notice.

Whatever business is being done is almost altogether on spring underwear and samples were being prepared for this class of goods by many mills as late as the second week of February and we believe it possible that some mills must have been at work on samples even after the middle of the month. Many of the mills which were reported as starting up along through January, merely started getting out lines of samples. This work became harder this year than ever before, because the very poor trade which jobbers and buyers are expecting makes them more particular in their choice and correspondingly harder to please.

During the first two weeks of February a larger number of mills were reported as starting up, than we had word of for some time and certainly many of them have orders to go ahead on their samples.

FEATURES OF INTEREST.

The only features of interest in the trade are what have to do with the tariff and tariff discussion. The progress of the Wilson bill has been closely watched from day to day, by the whole country and during the last weeks of the bill in the House, the discussion was alive with interest for woolen and knit goods manufacturers.

The fact that the bill has been passed to the Senate does not, of course, decrease the uncertainty in the least. Immediate trade conditions are, however, helped in so far as calculations for the future can be more acurately make and the worst that the textile manufacturer may have to expect can be more clearly seen.

There is first of all the great likelihood of the Senate returning the bill to the House with such ammendments and in such a form that the final passage of the bill will be still further prolonged, thus insuring the domestic market to home marufacturers for another season. Buyers would in that event rush into the market for heavy weight underwear and defer their position of "on the fence" to their operations for the spring of '95. We might then look to find a very noticeable though very temporary improvement in the market.

In the woolen lines, the present tariff is assured to Dec. 2nd by the Wilson amendment.

MILLS IMPROVING THEIR LINES.

The underwear mills are very generally extending and improving their lines and it is safe to say, that the goods made for the coming spring and fall will show a greater improvement in style, finish and quality than has been noticed for some few years back. Of course the extra care which agents have been compelled to go to, in order to meet the wishes of buyers, who are harder to please this year than ever before, accounts for this in a great measure.

We have in mind one very large Massachusetts mill having an established reputation for men's wear, extending their operations to lines of ladies' vests, ribbed and plain.

Another New England firm who have been making fine lines of ladies' and childrens' goods have started on men's wear and during the latter part of January were getting out samples of their additional lines which are to be nice goods of worsted and worsted and silk and will be a novelty in weight.

This same company is also extending its lines of full fashioned goods.

COLORS.

Next spring a greater number of shades and colors will be seen.

Among other shades which are expected to find a ready market are a light blue, very similar to what might have been seen exhibited last season, two very handsome shades of brown and brown mixes, particularly a brown mix very much resembling walnut in shade.

As for colors in hosiery, a larger number of shades and fancy colors than were exhibited last year could hardly be expected, they were then so great, though fancy hosiery is expected to have a better run.

A change for the better was noticeable in domestic cotton hosiery during the past month and goods will be in better demand.

FOREIGN BUSINESS

Chemnitz and English manufrcturers still find business with this country very poor, equally as domestic mills do.

They are finding no orders to speak of, and are anxiously waiting and hoping for a speedy settlement of the tariff question in their favor.

Foreign underwear mills are of course finding business relatively poorer than the hosiery mills.

It is a matter of great interest to note that Great Britain imported in 1893 German cotton hosiery to the value of about $2,000,000. and re-exported the same to the value of $240,000. of which about $77,000. worth was sent to the United States.

The following table is also of iuterest as showing a steady decline of exports of knit goods from England to this country.

British exports of hosiery for the year.

(Figures represent thousands.)

Cotton Hosiery	1891	1892	1893
Stockings and socks	$1580	1270	1025
" " " Doz. prs.	1214	1194	836
Other kinds	$1195	1180	935
Woolen			
Hosiery of wool, or wool mixed with other materials	$4105	3695	3650

Comparisons in Stockings.

CAUSE AND EFFECT.

There has been keen rivalry in manufacturing stockings within the last six months, and each manufacturer is doing his best to produce a stocking that will find a market at a price that will pay for the material used and the time consumed in the manufacture of it.

Now, like everything else, there are stockings, and there are *stockings*.

The first essential of a good stocking is its elasticity. A stocking that is knitted so tight that it has no spring, cannot be a comfortable one to wear. Stockings could be made of *woven* cloth, but who would want to wear them? Then there is the stocking that has no shape only that which is put in them when the goods are boarded; if you could see them on the clothes line of the consumer, they would

REMIND ONE OF A DISH RAG

or dusting cloth, more than a stocking, utterly devoid of shape. These stockings, if cut feet, are perhaps made on a round frame, the feet cut so as to form *something* of the shape of the foot, but from the welt at the top to heel, are one and the same size. (These stockings, like the Yankee's razor, are made to sell).

The same may be said of the seamless stocking, unless there is some device that will knit the stocking from the top or welt, to calf of the leg, then (narrow or tighten the stitch) until the heel is reached; by this method a much better stocking may be produced.

In opening up a dozen stockings from a box of seamless goods, in nine cases out of ten

THE FIRST THING THAT STRIKES YOUR EYE

will be either a toe closed up with the tension entirely too tight, presenting a drawn-in appearance, or the welt or hem

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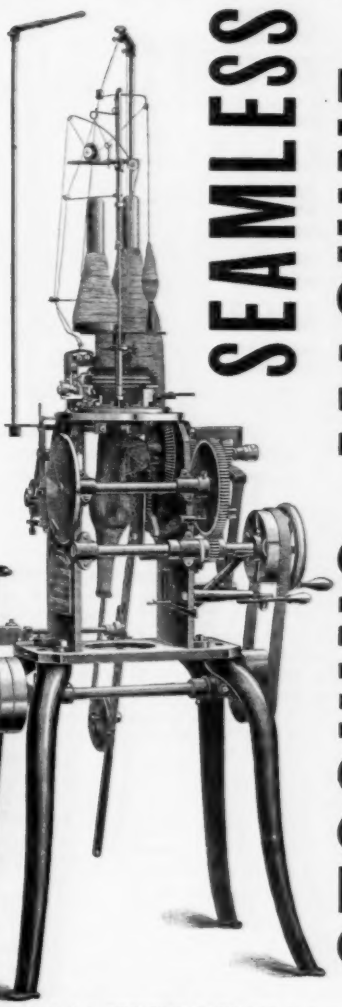
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with best and most uniform quality of work, from all grades of yarns. The Machine is extremely easy in operation,
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entirely too narrow (5-8 or 3-4 wide) and the crooked stitches of the sewing machine showing up in contrast to the more evenly knitted fabric. Particularly will these defects show on brown colored goods, and these are among the fashionable colors.

Again another noticeable feature of the brown colored hose is, the flakey irregular shade. This is often charged to the dyer when it is not his fault; the cause is, that the yarn being spun heavy and light, the heavier yarn takes more of the dye, and consequently must be darker. By holding the stocking between you and the light, this will be plainly seen.

Next issue I will try to tell how to avoid these defects. GIBBONS FRAME.

The Manufacture of Underwear.

WASHING, DYEING AND FULLING; HOW TO GET RID OF STEAM.

Continued from January.

In the November number I treated on the washing and dyeing of knit goods, but neglected to say anything about the clouds of steam which gather in these rooms. Before I leave this subject, let me give to the trade a discovery I made, how to get rid of nearly all of these enormous fogs which are found in all dye houses, and especially in cold weather.

In many dye houses I have seen the water dropping from the ceilings of these rooms, so heavy that one who did not understand it might really think they were outside, exposed to a heavy rainstorm. When the dye vats are boiling on a cold day, the help cannot see each other, and it is a hard place for workmen to be exposed in such an atmosphere, for their clothes are often wet through with the heavy clouds of steam.

The dyehouse should be kept clear of such clouds of steam.

THE ONLY WAY

I know of to do this is to establish a current of air which shall pass through these rooms, as the clouds of steam are due mainly to the fact that the air of the dye house is too cold to keep all the vapor in an invisible form; warm air takes up more water vapor than cold air, and this must not be forgotten when you attempt to rid the dye house of vapor, for if you try to draw out all the air containing steam, then more air must be drawn in. If the latter portion of air is cold, it will lower the temperature of the room, and because it can hold very little steam in an invisible form, it will rather increase than diminish the vapor. It is necessary then to

AVOID THE ADMISSION OF COLD AIR,

and introduce a warm current, so the vapor may be kept invisible, as the warm air is some lighter, and rises to the top of the room, and the circulation of warm air will control the vapor to a great extent.

I learned this five years ago, where I was called for a season to make alterations in a knitting mill, and enlarge it from a four set mill to a six, and lose no time, as the mill had to be kept running to fill the orders received. The dye house was on the ground floor, attached to one end of mill. I saw the first thing to be done was to begin there and make a change, therefore I erected a building for a few extra dye vats or tubs, leaving the original. The plan is necessary, to show the changes I made for the purpose herein to be described. Figures 1, 2 and 3 will show where the engine, boilers, drying room, dye house, etc., are situated, also the steam chest with fan and wool dryer, etc. Letters *A*, *B*, *C*, etc., will show where they were placed after being removed, and as there were no extras put in for heating, I wish to show the result and benefit derived by placing the machines in another position.

Diagram showing first floor, with position of same as indicated by the figures, before being removed. 1, engine room; 2, boiler room; 3, steam chest, with 600 ft. one inch steam pipe; 4, drying room; 5, large hot air pipe; 6, wool dryer; 7, large exhaust fan; 8, 8, dye-

DIAGRAM SHOWING CHANGES.

house; 9, wool scouring and hydro extractor; 10, machine shop.

Letters show position of machines after removal; *A*, hydro extractor; *B*, steam chest; *C*, exhaust fan; *D*, wool dryer; *E*, storeroom for dyestuffs; *F*, office for dyer. Observe the fan is built in the wall or partition. The fan is also four feet higher than where it formerly stood, on account of the floor where I put on the addition being level, or a few inches higher than the ground outside. I made it so because I learned the river would occasionally overflow its banks and enter the first floor, causing damage; * is an opening of a few inches between the fan and end of drying frame, which

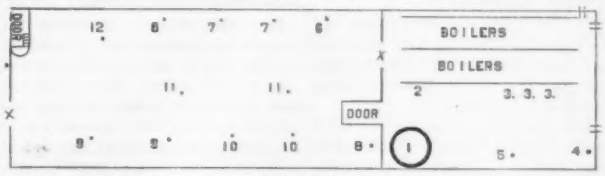

DIAGRAM NO. 2.

proved to be the best arrangement I have seen to get rid of the fog or vapor out of a dye house.

The dyer and his help were so

ELATED WITH THE IMPROVEMENT

that they wished me to secure a patent for it, but I did not do so, as it occurred by mere accident, and I made no pretence of doing away with the steam beforehand, and never thought of such, as I had put in skylights and lattice work to correspond with the former arrangement.

The dye house part of the building was only one story in height, with a gentle pitch of roof, but to our astonishment the lattice work was not required, but had to do as already mentioned, exclude all cold air and retain all the heat possible.

The only reason I can give for getting rid of the fog is as herein stated. The position of the steam chest, also the fan and wool dryer where there is a great amount of heat, with an opening in the top of partition wall, which is built of stone, with two doors and windows, and the upper sash of windows arranged so as to raise and lower as required. The heat in the drying room being admitted to the dye house, the current of air which the fan creates on the wool drying machine, as there is an opening there also, seems to have the desired effect of

CLEARING AWAY THE FOG,

for when it would rise, as it might occasionally when three or more dye tubs were boiling at the same time, one could stand and watch it disappear when it attained a certain height, and it would be invisible towards the fan, leaving the room comfortable for the workmen.

The wool was admitted by all who examined it, to feel softer, and not so harsh as when dried with the solid hot air, on account of the suction of the vapor from the dye house. Be this as it may, I know it was no worse, and it was allowed to dry sooner than where the machine stood at first, so I would advise any one who has a steam chest and a large wool dryer, instead of placing them in the attics of mills (which is very common, until of late when insurance companies rather objected to it) if you have a dye house or large washroom which is troublesome on account of vapor and have the necessary room, remove them to it, and let me know the result, unless you have something better. As a Good Samaritan you might lend a helping hand for the benefit of those who must earn their daily bread in such an atmosphere.

I am always willing to impart information by addressing care TEXTILE WORLD.

WASHROOM ARRANGEMENT.

I will give your readers a little idea of what was done to rid the room of vapor, where I was a short time ago altering and repairing a large knitting mill. It was a large room, 35x50, with all the necessary appliances for washing, two fulling mills, soap tubs, etc. This did very well, but was not as good as what has already been described, because we did not have the same amount of dry heat, as you will see by diagram. We drew out all the surplus heat we could from the boilers which were in an adjoining room, with a three foot fan, which was placed in the partition opposite the boilers, and another opposite that to draw or create a current of air to take the vapor outside, and as some may desire it, if they have nothing better, I will try and make it plain to them.

1, large filter, 2, rinse box, 3, 3, 3, bleach tubs, 4, liquor tank, 5, extractor, 6, 6, fulling mills, 7, 7, soap tubs, 8, pump for filter, 9, 9, steam and water tank, 10, 10, supplies, 11, 11, crates and boxes for goods, 12, condensed steam for washing hands, etc., *X*, *X*, fans. Steam and water tank was held up by a truss and frame from the wall. OLD SUPT.

—The Agawam Mfg. Co., Springfield, Mass., S. W. Rockwell, superintendent, are now idle, except what work is being done on getting out samples. They complain of the lateness and inactivity of the season. Their lines include men's, women's and children's all-wool underwear.

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KEYSTONE KNITTER
For Seamless Hosiery.

CYLINDERS
OF
Forged Steel

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CHAMPION SEWING MACHINE COMPANY,
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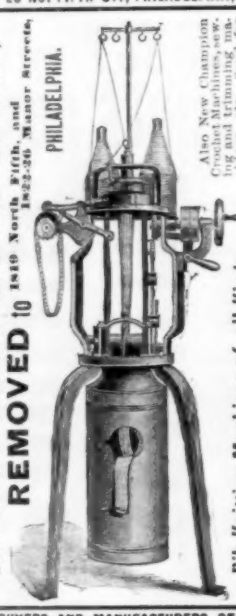

Also New Champion Cylinder Machine for ribbing and trimming machines, etc. Send for descriptions.
Rib Knitting Machines of all Kinds.

BUYERS AND MANUFACTURERS OF
UNDERWEAR,
Jerseys and Cardigan Jackets,
will serve their own interest by investigating the merit of the "NEVER RIP" SEAM.
All single-thread stitches have proven to be unsafe. A lock-stitch is not sufficiently elastic.
A STRONGER AND MORE ELASTIC STITCH is now required.
THE UNION HOSIERY MACHINE
Makes a SAFE, ELASTIC, TWO-THREAD STITCH that will not rip.
For circulars, with full particulars, address the
UNION SPECIAL SEWING MACHINE CO.
47 Leonard Street, New York;
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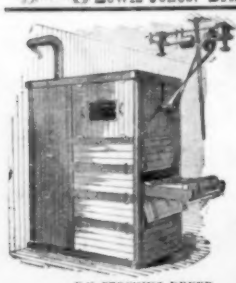
CRANE MFG. CO.
LAKEPORT, N. H.
Spring Needle Circular Knitting Machine
For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.
A Specialty of Hardened Bladed Burr Wheels with Self Oiling Brackets.

The BALLOU
Automatic Ribbed Knitting Machine
Built with Sectional Cam Ring and the most perfect weight take up. Best, Strongest and Most Durable Machine. Send for Price List.
Lewis Jones, Bristol, Pa.



E N STOCKING DRYER.

CYCLONE DRYERS
—FOR—
STOCKINGS, UNDERWEAR, STOCK, YARNS, CLOTH, ETC.
Textile Machinery and Shafting Work.
PHILADELPHIA
TEXTILE MACHINERY CO.
Hancock St., above Lehigh Ave.,
PHILADELPHIA, PA.

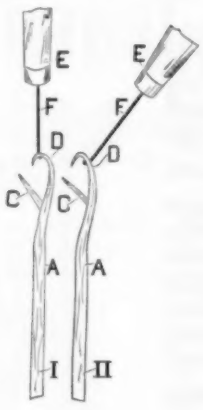
Practical Talks on Knitting.

II.

THE NEEDLE QUESTION.

As there are millions of knitting needles in constant use, it would not seem strange that the manufacturer should be interested in anything which suggests a way to make the life of the needle longer than what it is. Needles cost money. When the needles of the machine are imprudently handled the machine is not worked to its best advantage, and the owner loses money. The knitting machines built by modern builders are nearly perfect in every detail of mechanism. But the responsibility of the working part of the machine, that is regards the fixing of it, is gone when once the machine is sold and set up in the mill. Here the fixer takes it in charge. If a good man, he will adjust the working parts so that a good production will result. If an extra good man, he will see to it that the operators of the machines do their part too.

The main responsibility which falls upon the operator of the knitting machine is in regard to the management of the needles. A good knitter can make a knitting machine run a long time without necessitating new needles. A poor hand will have to have new needles frequently. If it falls upon the man who has charge of the machines to instruct the knitters the best way to handle the needles when making the heel and toe of the stockings, for instance, it would seem that he ought to investigate the matter from a mechanical standpoint. In the cut is shown the principle of preserving and also of breaking needles.



HOW MANY NEEDLES ARE BROKEN.

In this illustration we have the two needles A, A. Only the upper halves are shown. The needles are marked I and II, respectively. Needle No. I represents the proper way to handle same; needle No. II represents the wrong way. Eighty per cent. of the green hands who take hold of the work begin manipulating the needles as shown in Number I. Here *C* represents the latch of the needle and *D* the hook. *E* is the wooden handle of the raising hook which the knitter uses in lifting the needles when shaping the heel. *F* is the steel hook of the same. The position of the needle indicates where the cylinder is, and as the operator is opposite the rear of the needle, it shows that the hook *E* is held in such way that in raising the needle, the girl will give such a pull diagonally that the work of lifting the needle is not only made more difficult on account of friction, but the liability of springing, and perhaps breaking the shaft of the needle, is increased. The tendency of all new hands is to thus handle the needles.

HOW TO PREVENT IT.

As an overseer said to the writer a day or two ago, as regards this: "It is necessary to keep a sharp lookout on the knitters. If they are not watched they become careless and will break and twist off more needle hooks than their pay amounts to." The remedy, it would seem, consists in first instructing the knitters how to do the work right, then in seeing that they do it. In drawing Number I, it will be noticed that this handle and hook are straight up. This is the position which the hook ought to be in when the knitter lifts the needle. When done this way there is no friction of the needle's shank against the sides of the cylinder, and the needle can be lifted easily and quickly. The liability of twisting off the hook of the needle is reduced fully 80 per cent. when done like this.

As a rule, knitters listen to what their overseer tells them. But there are different kinds of help. In some mills they are so independent that the only way in which the managers can bring about a reform is by a system of fines.

Not long ago it became necessary for a mill manager to fine the knitters for every 100 needles broken or twisted through carelessness. Your correspondent happened to meet this man a few weeks after he had introduced a fine for broken needles. When the subject was brought up a broad smile passed over his face, as he explained that his broken needle bill had been reduced more than one-half since the use of the fines. The knitters in his mill happened to be a class which could not see well into a thing unless that thing was made to reach their pockets, when they saw it quite plainly. But it is hoped that when the hints given in this article, as regards the proper method of raising the needles when shaping the heel and toe are read by the fixer, the overseer or the knitter, it will not become necessary to adopt a fine system in order that the right thing may be done, but that it will be done because it is right.

KNITTER.

A Busy Textile Machinery Company.

The Philadelphia Textile Machinery Co., Hancock St. above Lehigh Ave., Philadelphia, Pa., have sold recently one underwear drier to the Springfield Knitting Co.; the trucks were so arranged that they will either carry adults' or infants' underwear.

The above firm also have orders, and we suppose by this time have delivered, one truck drier for 100 dozen Scotch caps per day, to the Mohawk Valley Cap Factory, Utica, N. Y.

The following firms have ordered stocking driers: Messrs. Smith & Angel, New York city; Messrs. Roth & Friedmann, Toledo, O.; Mr. J. S. Palmer, Germantown, Pa.; Mr. Frank Boulton, Philadelphia, Pa. The firm has also several orders for metallic ring doffers. This looks like prosperity in hard times like these and we hope they will keep up the good record.

Seamless Heels vs. Wrought Heels.

An objection has often been raised to the heel of the seamless hose and half-hose, by the buyers of such goods, on the ground that they do not compare favorably with the heel of fashioned goods made upon the hand frame or improved rotary frames, on the straight principle. This, in a measure, is due to the fact of the heels of seamless goods being too small, and thus allowing them, when in wear, to pass under the bottom of the heel and foot, instead of maintaining their proper position; while, with wrought heels, this was not the case.

In the making of the heels upon the straight frames, careful consideration was given to this particular point, and a careful calculation has been made whereby to determine the exact proportion of those needles used when making the leg that shall be allotted to the heel and instep. Taking as an average, we find these proportions to equal ·44 for the instep, and ·28 for each side of the heel, or as total of ·56 for the heel in the whole. Take this rule and apply the same to an ordinary wrought half-hose on 42 leads or 84 needles, this being a size that can be readily compared with a seamless article of the same width, and we find that the proportions would on an average, be as follows:

First side of heel, 24; instep, 36; second side of heel, 24; total, 84 needles; thus showing the heel to be on 48 out of the total of 84 needles. This gives a heel that is larger in proportion than the average seamless heel, as made up to the present, and makers of this class of article will do well to consider this. Other sizes can be calculated in proportion.

Take another example of 120 needles, and this, as made upon the hand or rotary frame, would be divided as follows, according to the rule laid down above:—first side of heel, 34; instep, 52; second side of heel, 34; or a total for heel of 68 needles out of the 120. It has been customary not to exceed half the needles in the dial for the making of the heel, but in special cases some advance has been made on this number, but still insufficient to give the size of heel that is desired, which it will be seen is about six-tenths of the whole; therefore at commencing the heel, only four-tenths of the needles should be lifted, and the machine reciprocated as usual.

It will be seen that this gives a much larger heel, as for every needle extra, two courses are made—the one in the narrowing, and the other in the widening of the heel, or the returning of the needles again into action, ready for the making of the foot.

Another method, as practiced in American factories, for the increasing of the size of the heel, is to raise the half of the needle in the cylinder, and when the usual needles have been raised for narrowing, to return them into action, and reciprocate two or more needles into action of those usually left standing, and then narrow again to the half of the needles, and finish the heel in the usual way. This gives a gore to the heel, which is liked, though of a rather peculiar appearance, but certainly better than the small heels, of which so many complaints are made.—From the Knitters' Circular and Monthly Record, England.

WEAR AND TEAR OF BUILDING MATERIALS.

MATERIAL IN BUILDINGS.	FRAME BUILDINGS.		BRICK BUILDINGS, SHINGLE ROOF.	
	Average Life, Years.	Percentage of Depreciation Per Annum.	Average Life, Years.	Percentage of Depreciation Per Annum.
Brick	..	..	66	1½
Plastering	16	6	30	3½
Painting (outside)	5	20	6	16
Painting (inside)	5	20	6	16
Shingles	16	6	16	6
Cornice	30	3½	40	2½
Weather-boarding	30	3½	..	..
Sheathing	40	2½	50	2
Flooring	12	8	13	8
Doors (complete)	25	4	30	3½
Windows (complete)	25	4	30	3½
Stairs and newel	20	5	20	5
Base	30	3½	30	3½
Inside blinds	30	3½	30	3½
Building hardware	13	8	13	8
Piazzas and porches	20	5	20	5
Outside blinds	16	6	16	6
Sills and first floor joints	25	4	30	3½
Dimension lumber	40	2½	66	1½

ESTIMATES OF MATERIALS.

To Find the Number of Bricks Required in a Building. Rule—Multiply the number of cubic feet by 22½. The number of cubic feet is found by multiplying the length, height and thickness (in feet) together. Bricks are usually made 8 inches long, 4 inches wide and 2 inches thick; hence it requires 27 bricks to make a cubic foot without mortar, but it is generally assumed that the mortar fills 1-6 of the space.

Lime, Sand and Plaster.—Three and one-half barrels of lime will do 100 square yards plastering, two coats.

Two barrels of lime will do 100 square yards plastering, one coat.

One and one-half bushels of hair will do 100 square yards plastering.

One and one-quarter yards good sand will do 100 square yards plastering.

One-third barrel of plaster (stucco) will hard finish 100 square yards plastering.

One barrel of lime will lay 1,000 bricks. (It takes good lime to do it).

Two barrels of lime will lay 1 cord rubble stone.

One-half barrel of lime will lay 1 perch rubble stone (estimating ¼ cord to perch).

To every barrel of lime estimate about ¾ yards of good sand for plastering and brick work.

Mason Work—Brick.—One and one-eighth barrels lime and five-eighths yards sand will lay 1,000 bricks.

One man will lay 150 feet of stone per day with one tender.

Cement.—One and one-quarter barrels cement and three-quarters yard sand will lay 100 feet rubble stone. Same time as to mason and tender as rubble.

Floor, Wall and Roof Measure.—To find the number of square yards in a floor or wall: Rule—Multiply the length by the width or height (in feet) and divide the product by 9; the result will be square yards.

—The Springfield Knitting Company have just moved in to much larger quarters in the new building 29, 31, 33 and 35 Taylor street. They were recently located at 291 Main Street, but were burned out November 21. Since their removal they have increased their capacity about one-third, so that they now have 36 knitting machines. Though at present not very busy, yet they have very bright hopes for the future and prove it by the progressive manner in which they are adding to the plant. They make a wide range of ladies' and children's underwear, including lines of cotton, cotton and worsted, and all worsted goods. They are now planning to extend their lines and are getting out samples for a few specialties in men's wear, medium weight goods of worsted and worsted and silk. The Springfield Company also intend further enlarging and putting in fashioned machinery to give a capacity of 25 dozen. Among other fashioned machinery they will set up a few Cotton's patent frames. C. B. Potter is the superintendent and is a most active and practical man.

Too Much Wilson Bill.

JAMESTOWN, N. Y., Jan. 25, 1894.

We have shut down our mill, and are closing out our business, and therefore have no further use for the TEXTILE WORLD. Please stop when our subscription expires. Too much Wilson Bill.

Yours respectfully,

JAMESTOWN KNITTING MILLS.

—J. C. Goodwin, 523 Arch St., Philadelphia, is putting his trimmers on the sewing machines going into Albert Martin's new knitting mill, 1132 Arch St., Philadelphia.

—William Boyton has resigned the superintendency of the Rob Roy Hosiery Co., Troy, N. Y. and accepted a similar position in Herkimer, N. Y.

The Senate's Questions to Manufacturers.

Now that the tariff bill has passed the House of Representatives, interest centres on the proceedings of the Finance Committee of the Senate. Much has been said about the series of questions which have been propounded to manufacturers, importers, merchants, chambers of commerce, labor organizations, and agriculturists on the subject of tariff rights and the existing depression in the trade. We have received from the Committee on Finance a full set of these interrogatories, and the circular letter to manufacturers is published below. In the letter accompanying these blanks the chairman of the committee states that manufacturers who have not individually received the question blank are cordially invited to make replies based on the following questions directly to the committee:

CIRCULAR LETTER OF INQUIRY TO MANUFACTURERS.

COMMITTEE ON FINANCES,
UNITED STATES SENATE.

WASHINGTON, D. C.,

My Dear Sir:

In former years when the question of the tariff was uppermost in the consideration of the people, circular letters were addressed to merchants, manufacturers, and producers representing the industrial elements of the community, and others, making inquiries as to the character and amount of their output, the capital invested, prices, wages, rates of import duties, etc., etc. This was notably the case in 1845, under the direction of Secretary Walker; in 1882, through the Tariff Commission; and in 1885, under the direction Secretary Manning.

The replies to such interrogatories furnish valuable statistics and other data, and materially aid in legislating upon the subject of customs duties.

With a view to securing such information, the Committee on Finance submit to you the following questions, which, they trust, you will formulate replies to, adding such general or special matter as you may be possessed of, and which, in your judgment, will be of value to the committee:

1. State name of corporation, firm, or individual, and character of manufacture.
2. State location of plant.
3. What amount of capital is invested
4. When was the industry established?
5. State the amount of production, kinds, and value of articles manufactured annually since the establishment of your industry: Description, value, and quantity for each year.
6. Have you at any time during the past two years been running less than full time, and if so, when, and why?
7. What rate of ad valorem (or specific) duty is necessary to place domestic products on an equal footing with foreign producers, and your reasons why?
8. If the rate of duty upon your class of manufacture were reduced one-third, what reduction in cost of production would be necessary?
9. Please state the domestic wholesale price of your goods in 1884, 1890, and 1892, and at the date of your answer.
10. To your knowledge has there been an increased competition in your line of manufactures, either foreign or domestic, during the past four years?
11. Do you desire a specific or an ad valorem duty, and why?
12. Are you manufacturing or producing as many goods or commodities as you were in 1892, and if not, why not?
13. What has been the tendency of wages during the past twelve months?
14. If possible will you give an estimate of the exact cost of living of the families of two or more of your skilled workmen, specifying as near as may be items of expenditure.
15. Have you any difficulty in construing the existing law in regard to importations of the class of articles you produce, and have you any suggestions to make?
16. Has the price of living in your locality increased or decreased during the past four years, and to what extent?
17. What in your opinion is the cause of the present depression in trade, and what would be your remedy to correct it?
18. What component materials of your manufacture are, to you, raw materials?
19. Are the goods you manufacture luxuries or necessities?
20. What rate of interest are you compelled to pay on loans?
21. What effect has immigration had on your business?
22. What proportion of skilled labor do you employ?
23. How do you propose to meet any reduction of duty on the goods you manufacture?
24. Give the number of men, women, and children employed, and state the wages you pay for ordinary and skilled labor.
25. How many hours per week are they employed?
26. Do foreign articles of like kind enter into competition, and to what extent?
27. What proportion of your manufacture is exported, and do you realize a less price therefrom than from domestic consumption?
28. Has the cost of manufacture increased or decreased since 1883, and to what extent?
29. Has the increase or decrease been in materials or labor?
30. Have your selling prices increased or decreased since 1890?
31. What amount of the agricultural production of the country is consumed in your manufacture, or through it, indirectly or directly, and what amount of other domestic productions?
32. What component materials are used in your manufacture on which you pay a specific or an ad valorem duty? Give the rates of duty.
33. If your raw material were free would there be any necessity for a customs duty on the manufactured product?
34. Please state the wholesale prices for 1884, 1890, and 1892. Have these prices increased or decreased since 1892?
35. What changes, if any, do you recommend of existing rates of duty or administrative custom laws?

The committee are desirous that your reply shall give a full expression of your views and not be restricted to merely answering the questions categorically. It, however, should be confined to your specific business and expressed as concisely as possible.

Publicity will not be given to names or locations of business if you so desire.

Please make your reply on the inclosed blanks and return it in the accompanying envelope. Very respectfully,

W. W. VOORHEES,
Chairman.

The Wilkes Barre Lace Co.'s New Yarn Mill.

The Wilkes Barre Lace Mfg. Co. of Wilkes Barre, Penn., have started their new 18,000 spindle mill to supply yarns for their lace machinery and for the market. Several radical economies are attained in the spinning of their own yarns, as instead of buying in skeins and winding upon their special bobbins for the lace machines, they double and twist direct upon their bobbins, ready for the lace machines.

In building a mill of larger capacity than is required for making their own yarns, they claim some special advantages in matters of economical production.

Among their especially favorable circumstances is the fact of being surrounded by a large mining population, and in being able to secure a very reliable and permanent class of help among the families of the miners.

Their machinery was selected very carefully, to secure what they consider the best economical product and highest uniformity of quality, and they make for the market only 30s to 40s, two ply, thus maintaining a small range of numbers. About one hundred operatives are employed.

—Jas. W. Greaves who for seven and a half years was superintendent of the Valley Worsted Mills, Providence, has now decided to enter the yarn business with office in the Industrial Trust Co.'s building in Providence. He will deal in cotton, wool and worsted yarns, and from long experience as a superintendent of spinning, brings a practical knowledge of yarns, their qualities and best adaptation, which ought to be of value to his clients.

Comparative Tables.

SHOWING EQUIVALENTS OF THE DIFFERENT YARN STANDARDS IN COMMON USE IN KNITTING MILLS.

New Hampshire Standard, or weight of 50 yards in grains.	Yards per pound, 7000 grains to the pound avoirdupois.	Yards per ounce, 437.5 grains to the ounce.	New York or Cohoes Standard, weight of 64 yds. in grains.	Lisle 300 yards per pound per number.	Linen 1000 yards per pound per number.	Cotton Number, 840 yards per pound per hank.	Worsted, 560 yards per pound, per number.	French, Official, 1000 metres per kilogramme per number.
1166 67	300	18.75	145.83	1				1 1.128
625.	560	35.	78 13					
583.33	600	37.5	72.92	2				
416.66	840	52.5	52.08			1		1.693
388.89	900	56.25	48.61	3				
312.5	1120	70.	39.06				2	2.257
291.67	1200	75.	36.46	4				2.418
233.33	1500	93.75	29.17	5				
218.75	1600	100.	27.34		1			3.224
208 33	1680	105.	26.04			2	3	3.386
194.44	1800	112.5	24.31	6				
166.66	2100	131.25	20.83	7		2½	3½	4.233
156.25	2240	140.	19.53				4	4.515
145.83	2400	150.	18.23	8	1½			4.838
138.89	2520	157.5	17.36			3	4½	5.080
129.63	2700	168.75	16.20	9				
125.	2800	175.	15.63		1½		5	5.644
116.66	3000	187.5	14.58	10				6.451
109.38	3200	200.	13.67		2			
105.06	3300	206.25	13.26	11				
104.17	3.60	216.	13.02			4	6	6.773
97.22	3600	225.	12.15	12	2½			7.257
89 74	3800	243.75	11.22	13				
87.86	3920	245.	10.98				7	7.902
83.33	4200	262.5	10.42	14		5	7½	8.466
78.13	4480	280.	9.77				8	9.031
77.7	4500	281.25	9.72	15				
72.92	4800	300.	9.12	16	3			
69 44	5040	315.	8.68			6	9	10.160
68.65	5100	318.75	8.58	17				
64.82	5460	337.5	8.10	18				
62.50	5600	350.	7.81		3½		10	11.289
61.40	5700	356.25	7.68	19		7	10½	11.853
59.54	5880	367.5	7.44					
58.33	6000	375.	7.29	20	3½		11	11.995
56.82	6160	385.	7.10				11	12.417
55.56	6300	393.75	6.95	21		7½	11½	12.699
54.69	6400	400.	6.84		4			12.902
53.03	6600	412.5	6.63	22				
52.08	6720	420.	6.51			8	12	13.547
50.72	6900	431.25	6.34	23				
48.61	7200	450.	6.08	24	4½			14.514
48.08	7280	455.	6.01				13	14.676
46.67	7500	468.75	5.83	25				
46.30	7560	472.5	5.79			9		15.240
44.85	7800	487.5	5.61	26				
44.64	7840	490.	5.58				14	15.801
43.75	8000	500.	5.47		5			16.128
43.21	8100	506.25	5.40	27				
41.67	8400	525.	5.28	28	5½	10	15	16.934
40.23	8700	543.75	5.03	29				
40.06	8960	560.	4.88				16	18.062
38.88	9000	562.5	4.86	30				
37.88	9240	577.5	4.74			11	16½	18.627
37.63	9300	581.25	4.70	31				
36.76	9529	595.	4.60				17	19.191
36.46	9600	600.	4.56	32	6			19.352
35.35	9900	618.75	4.42	33				
34.72	10080	630.	4.34			12	18	20.320
34.51	10200	637.5	4.29	34				
33.33	10500	656.25	4.17	35		12½	18½	21.166
32.89	10640	665.	4.11				19	21.448
32.41	10800	675.	4.05	36	6½			21 771
31.25	11200	700.	3.91		7		20	22.577
29.76	11760	735.	3.72			14	21	23.706
29.16	12000	750.	3.65	40	7½			24.190
28.41	12520	770.	3.55				22	24.835
27.78	12600	787.5	3.47			15	22½	25.400
27.34	12800	800.	3.42		8			25.803
26.04	13440	840.	3.26			16	24	27.093
25.99	13500	843.75	3.24	45				
24.51	14280	892.5	3.06			17	25½	28.786
24.31	14400	900.	3.04	48	9			29.029
24.04	14560	910.	3 01				26	29.361
23.33	15000	937.5	2.92	50				
23.15	15120	945.	2.89			18	27	30.480
22.44	15680	975.	2.81	52	9½			31 448
21.93	15960	997.5	2.74			19	28½	32.173
21.88	16000	1000.	2.74		10			32.255
21.21	16500	1031.25	2.65	55				
20.83	16800	1050.	2.60	56	10½	20	30	33.867
19.89	17600	1100.	2.49		11			35.479
19.54	17920	1120.	2.44				32	36.125
19.44	18000	1125.	2.43	60	11½			36.287
18.94	18480	1155.	2.37			22	33	37.254
18.38	19040	1190.	2.30				34	38.382
18.23	19200	1200.	2.28		12			38.705
17.95	19560	1218.75	2.24	65				
17.36	20160	1260.	2.17			24	36	40.640
16 83	20800	1300.	2.10		13			41.931
16.67	21000	1312.5	2.08	70		25	37½	42.334
16.45	21280	1330.	2.06				38	42.896
15.56	22500	1406.25	1.94	75				
16.03	21840	1365.	2.00			28	39	44.027
15.63	22400	1400.	1.95		14		40	45 155
14.86	23520	1470.	1.86			28	42	47.413
14.58	24000	1500.	1.82	80	15			48.379
14.29	24640	1540.	1.78				44	49.671
13.89	25200	1575.	1 74	84	15½	30	45	50.800
13.73	25500	1593.75	1.72	85				
13.67	25600	1600.	1.71		16			51.606
13.50	25760	1610.	1.70				46	51.928
13.02	26880	1680.	1.63			32	48	54.186
12.97	27000	1687.5	1.62	90				
12.87	27200	1700.	1.61		17			54.831
12.28	28500	1781.25	1.54	95				
12.25	28560	1785.	1.53			34	51	57.573
12.15	28800	1800.	2.77	98	18			58.066
11 67	30000	1 75.	1.46	100	18¾			60. 476
11.57	30240	1890.	1.45			36	54	60 960
11 51	30400	1900.	1.44		19			61 282
10.96	31920	1995.	1.37			38	57	64 345
10.94	32000	2000.	1.37		20			64.507
10.42	33600	2100.	1.30	112		40	60	67.730

—The Crane & Waters Co., Millbury, Mass., 10 set, are now getting out samples, and complain of the great dullness of trade. This time last year they were taking orders. They manufacture underwear, principally men's goods, though some ladies' vests, both plain and ribbed. Their specialty is heavy weights. Mr. O. H. Waters is agent and superintendent; S. H. Dodge, boss knitter; William Molt, boss dyer; Wm. M. Harding, boss carder, and Charles Mallalieu, spinner.

—The Lapham Woolen Mills, Millbury, Mass., operated by Mr. F. A. Lapham, son of Mr. M. A. Lapham, recently deceased, are among the most fortunate mills in the country, inasmuch as they are running to their full capacity, 7 set, 56 looms, 10 hours per day. They were shut down only four weeks this summer and then it was for the purpose of putting in a new iron penstock. No reduction has been made in the wages in this mill. Mr. Lapham speaks rather discouragingly of the business situation and outlook, however. John H. Knapp is the superintendent, a young and able man; J. Goblin is boss carder; Geo. H. Mee, spinner; Frank H. Durkin, weaver; R. J. Archibald, designer; Geo. J. Knapp, finisher; and J. P. Kennedy, dyer.

For Foster and other Winders,
CONE TUBES,
PAPER TUBES FOR CONE WINDERS.
Manufacturer of all kinds of
Paper Cop Tubes,
Parallel Tubes, Taper Tubes,
Special Tubes to order.
J. McCAUSLAND,
33 Canal St., PROVIDENCE, R. I.

TRADE FAIR AND SQUARE MARK
RIBBONS
To Trim UNDERWEAR.
Best Qualities. Write for information to
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Manufacturers,
65 Greene Street, - - - New York City.

GIBBONS FRAME
Sewing Machines, with or without Trimmers.
SPECIAL FEATURES:
Welting Machines, Finishing Machines, Machines for Sewing Wet Goods, Machines for Double Heel Work, Machines with Concealed Stitch for Tops of Stockings, Etc., Etc. Tables and Shafting with Transmitters.
All machines have Ball and Socket Bearings, with Hardened and Ground Working Parts.
MACHINE JOBBING.
Manufactory, Second and Diamond Sts., Philadelphia.

WM. COREY CO.,
Manufacturers of Knitting Machine
Latch Needles,
MANCHESTER, N. H.

LOYAL T. IVES.
MANUFACTURER OF ALL KINDS OF
SPRING
Knitting Needles
New Brunswick, N. J.

Excelsior NEEDLES
The Best Hosiery Needle in the market.
Manufactured by
Wardwell Needle Co., Lakeport, N. H.

PAGE NEEDLE CO.,
Manufacturers of
LATCH NEEDLES, Chicopee Falls, Mass.
Also Balmoral Needles from the Best Steel Wire.

Wm. Breedon & Son.,
Manufacturers of
Spring Knitting Needles,
And Burr Blades of all kinds.
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Spring Knitting Needles of Points from the best Cast Steel. Satisfaction Guaranteed.
I. K. Paramore
Manager.
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ORION TREAT,
MANUFACTURER OF
SCREW RIVETED BALMORAL AND DOUBLE RIB NEEDLES.
(Patented May 6, 1890.)
Manchester Green, - - Conn.
All work guaranteed.

BRASS STAMPS AND DIES
OF EVERY DESCRIPTION.
Stamps for Fast Black Hosiery a Specialty.
WHITE AND COLORED INKS.
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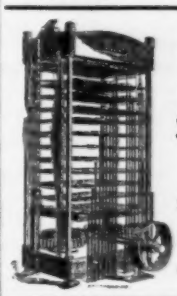
523 Arch St., - Philadelphia, Pa.


THE CRAWFORD Hollow Plate Steam Press
For Knit or Woven Goods.
Is worth investigating
J. J. Crawford & Son
Nashua, N. H.

SITUATIONS WANTED.

757 **Knitter and Machinist**, who has had great experience in making and repairing knitting machinery; Lamb and the George W. Leighton machines a specialty. Can repair any machinery connected with woolen mills. Wages $4 per day.

596 **Able, willing young man.** Age 28, unmarried. Successfully held position in twelve set mill on high grade worsteds and woolens. Good references.

592 **Supt. or finisher** understands all grades. Ladies' and men's underwear. $3.50 per day.

917 **Full fashioned underwear** cottons patent power frames, and hand frames.

921 **Boss knitter.** Balbriggan and coarse underwear. Prefers N. Y., N. J. and N. E. Wages moderate.

911 **Colored cotton, worsteds, and** cassimeres. 11 years superintendent in 3 different mills, 44 years of age, married.

935 **Fine broadcloths and worsteds,** fancy and plain, for men's wear. His experience gained in German and American mills. Is a first class man. Desires a position as superintendent or designer.

942 **Is Expert on Woolens, Worsteds** and dress goods. Desires a position as superintendent, or assistant superintendent and designer, or designer alone. Has worked in best New England mills. Salary $2000 per annum.

1014 **Designer, asst. supt., or supt.,** in medium or large mill. Has worked on cassimeres, unions, overcoatings, worsteds, solid, and cotton warp, and cotton filled worsteds. Excellent references.

829 **Has carded all kinds of stock** and worsted in some of the very best rooms in New England as second hand, wants overseers position in a small room, and can fill it. Salary moderate. Age 30; married.

1017 **Boss spinner** on stock for cassimeres, beavers, cheviots, flannels and woolen shirting. Age 29, married. Wages $2 50.

1021 **Worsted overseer** of spinning and drawing, or superintendent. Mohair and long and short wools.

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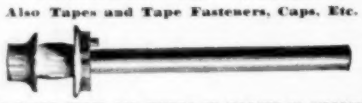
Also Tapes and Tape Fasteners, Caps, Etc.



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Lowest prices for first-class goods. For information concerning our specialties send postal card to
WM. S. SPOFFORD & SON, 234 Chestnut St., Providence, R. I.

ESTABLISHED 1865.
JOHN W. BARLOW,
Manufacturer of

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RAW HIDE BASKETS,
WORSTED APRONS—and—LOOM STRAPPING.
Also, all kinds of WORSTED ROLLS COVERED and WOODED.
SPICKET MILL. Lawrence, Mass.

THE TORRANCE MANUFACTURING CO.,
Sole Makers of the TORRANCE PATENT.
Self-Acting BALLING MACHINE,
18 & 20 Davis St., E. Newark, N. J.
The attention of Woolen Manufacturers is invited to these Machines as convenient labor-saving appliances. The machine can be adjusted to make any size balls to suit lots, and the creel is constructed to carry twice the number of spools used by the old system. Send for circular.

GEO. GERRY & SON,
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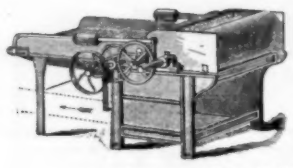
Manufacturers of



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WOOL and WASTE DUSTERS,
RAG DUSTERS, NAPPERS,
Improved
CLOTH MEASURING MACHINES.
Lumper and Duster Cylinders Refilled and Repaired.

PARKHURST BURR PICKERS
For Cleaning effectually
Wool or Cotton.
Picker and Card . . .
FEEDS.
STEEL RING BURRING MACHINE CYLINDERS AND FEED ROLLS A SPECIALTY.
ATLAS MANUFACTURING CO., - Newark, N. J.

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—MANUFACTURERS OF—
The Bancroft Mule, The Clinton Yarn Twister,
The Murdock Drop Wire Stop Motion for Warpers.
CLINTON, - - MASS.

FACTORIES:
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AMERICAN
Card Clothing Co
MANUFACTURERS OF CARD CLOTHING OF EVERY DESCRIPTION.
SURFACE GROUND OR NEEDLE POINT
Estimates Given & Orders Filled Promptly at each Factory
OFFICE: KNOWLES BLDG.
WORCESTER, MASS.

In Use Five Years by the Best Mills.

Yarn and Cloth Strength Testers.

YARN BEAM.

Scales, Reels, Twist Counters.
Fred B. How,
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Boston, Mass.

DESIGNS. Expert Service.
I am prepared to furnish to manufacturers, advice, opinions, or suggestions as to styles and patterns of goods. If desired I will furnish details of weave construction, stock to be used, and finish required, of any pattern or sample submitted to me. I am in constant touch with the New York market, and have the necessary technical knowledge. I am not simply a picker-out of patterns, but will do that work if desired. My terms are not unreasonable. All communications confidential. Address DESIGNER, P. O. Box, 222, Brooklyn, N. Y.

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MACHINISTS,
20 to 30 East Canal St., - Phila.
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Ribbon Looms,	1, 2, 3 & 4 Bank Lathes,
Tape "	Jacquard Machines,
Suspender Looms,	Quill Winders,
Goring "	Gimp Spinning Wheels.
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Self-Balancing Attachments for Hydro-extractors.

WOOLEN DEPT.

Method of Keeping Track of the Work.

We desire to publish a series of articles on the system employed in different first-class woolen mills of putting the work through, that is, their manner of keeping track of the work, in the way of different lots, yarns, colors, wool, and the book system employed in the different departments, such as the designer's book, and those kept in the dressing, weaving, finishing and shipping departments.

It has been impressed upon us very forcibly, by several marked instances of poor system, that an exchange of views through the columns of the TEXTILE WORLD would be of value to a number of mills that we can think of, who are perhaps not aware how much their methods are out of date.

We solicit contributions on this subject from superintendents, designers and overseers in all departments.

We shall be pleased to pay for such articles as we use, and shall of course consider any communications on this subject as confidential, and neither the writer's name nor the name of mill will be disclosed if so desired.—EDITOR.

Satinet Printing and Dyeing.

EDWARD TURNBULL.

This important, though somewhat obscure part of the woolen trade, known and understood by so few people, is, in the writer's opinion, one of the most complicated arts in the whole range of textile industries, either in this country or in England (the only two countries I believe engaged in this trade).

Some idea of its importance may be formed when it is known that there are at the lowest computation over 60,000 yards per day printed or dyed on an average the year round.

The term satinet is very elastic, embracing as it does light shirtings and heavy weight overcoatings, and every grade of goods between them, made from cotton and shoddy wool; in most instances from the refuse left from the manufacture of higher grade of goods.

They come from the manufacturer in

ALL SHADES,

from white to black. The proportion of cotton and wool varies with every grade of goods; some in fact are all cotton, and it is this irregularity that taxes the ingenuity of the printer or dyer; in some instances this irregularity is found in goods sent for printing or dyeing which are classed as the same goods, when in reality they vary both in proportion of cotton and wool, and also in shade, weight, and imperfect weaving.

When the goods come to the printer or dyer in this very crude state, it is the wonder of all people who have seen them before entering the printworks and when leaving it how the wonderful transformation has taken place. On the one hand a dirty, uneven, raggy fabric; on the other a fine piece of goods with a pattern printed on it, suitable for overcoatings, ulsters, suitings, pantaloonings, etc.

HOW RECEIVED AT PRINT WORKS.

The goods come from the various manufacturers in cases, containing from 16 to 50 pieces per case, averaging from eight to nine hundred yards altogether; these pieces are sewn together in suitable quantities for convenient handling, or, as in many instances, according to the number of yards required to make up a certain style, for all the work is given out by commission merchants and a buyer will often require a number of styles in one case of goods.

After these pieces are joined together, they go

DIRECT TO THE PRINTING MACHINE,

(I wish to speak of the printing first, dyeing afterwards) without any washing or scouring, with all the dirt in, and are padded or "grounded," as it is sometimes called. This operation serves a two-fold purpose; it presses a layer of coloring matter evenly on the surface of the goods, making the goods a different shade from the original, and at the same time this padding or grounding shows up to greater advantage all the subsequent colors put on after the grounding.

It will be opportune here to explain what this coloring matter is that is used in padding.

The base of most all the colors used for this purpose is the white oxide of zinc in varying proportions, mixed with albumen (the common blood albumen dissolved in water); these are intimately mixed, forming a white pigment. At times, according to different ideas of color makers, gum water, or starch, or both, are mixed with the albumen and zinc.

From this white pigment formed, a variety of tints can easily be made, by the addition of either aniline colors or what are commonly called pigment colors, ultramarines, etc. It is not uncommon to mix these colors together to obtain the various shades necessary. By varying the amount of coloring matter added to the white coloring matter first mentioned, an unlimited variety of shades are produced.

A method of obtaining different shades of one color that has often led to

SERIOUS ERROR

is that of reducing a given color to half its strength, and sometimes three-fourths; thus getting a lighter or more delicate shade. Now, as this reduction is generally made with starch or gum water, the fastening or fixing power of the albumen is reduced accordingly. Now, as the goods after printing have to be subjected to steaming and washing, and have to stand a considerable amount of punishment, it is unreasonable to expect the goods that have been grounded with a color reduced in strength 50 per cent. or 75 per cent. will stand the punishment that a color would at full strength. The albumen, which in these cases is acting the part of a mordant, is

TOO WEAK TO SERVE THE DOUBLE PURPOSE

of uniting with the fabric and the coloring matter, for it has to do both.

Then again, the coloring matter in delicate shades ought to be more permanent; the ordinary violets, blues, ultramarines, and most oxide colors are all more or less fugitive, and there are on the market coloring matters to be bought which, for these delicate shades, where such a small quantity is necessary, it would pay to use. Even if a better quality of coloring matter is used, very much judgment is required in any treatment after printing. They will not stand the long steaming or the continued washing that more dense colors will. The more dense colors will allow for quite considerable depreciation, without any appreciable effect, while the lighter shades, with such a small amount of coloring matter, will admit of no depreciation, and the presence of foreign elements in the goods will decolorize the grounding or padding.

It is often necessary to pad the goods twice to insure a more perfect grounding or to obtain a desired shade; it also enables the printer to get more

NEATLY DEFINED PATTERNS,

just for the same reason that a painter would put two coats of paint on a building, the varying colors looking better by contrast.

This padding is done on an ordinary printing machine, and as the pad rollers are so engraved to put a large volume of color on the goods, a liberal supply of drying cylinders is necessary; this is the method of drying, and it is important that the goods should be perfectly dry after grounding, for a number of reasons.

The principal reason for thorough drying lies in the fact that as these goods go direct to the other printing machines to have the pattern printed on them, they would take the pattern unevenly if damp. Another reason equally important, is one sometimes lost sight of in drying heavy fabrics over cylinders, viz., if not thoroughly dry, a difference will be found in the goods from side to side, that is, on the steam side of the cylinders the piece will be dryer than on the water side of the cylinders, and very serious consequences follow.

In my next article will treat on the other processes employed to make up the desired patterns, the colors and their composition, steaming, washing, etc.

(To be continued.)

Advantages of Sponging Cloth at the Mill.

We are aware that the question of sponging cloth at the mill vs. sponging at the tailoring or cutting establishment has been canvassed by manufacturers, and due consideration given to the subject, when the hand method of sponging was employed.

In looking over the references of a sponging machine, we noticed that a large number of machines had been sold to clothing manufacturers, and a comparatively small number to the mills, although a number of the mills had purchased the machines either for sponging or some other purpose.

The first thought that occurs in this matter is that a cutting clothier or consumer ought naturally to prefer that his goods should be thoroughly finished before they come to his establishment, therefore if he has to perform the operation of sponging in his own establishment, or to send the goods out, he has not only the expense of the operation and the uncertainty as to the amount of shrinkage in new patterns or fabrics with which he is not thoroughly familiar, but also the uncertainty as to just how the finishing will appear when the goods are ready for cutting.

On account of these disadvantages, it would seem very natural that the cutter might prefer to have his goods sponged before purchasing, and might probably give a preference to goods which were thus treated, for the reasons stated. On the other hand, however, we understand that the commission houses and dealers have objected to the sponging at the mill, as the finish was not quite so attractive appearing after the goods were sponged, consequently they were more difficult of sale, and a still more important consideration, that after the goods had been sponged, they were not returnable, hence a diminution of claims was sought by throwing the process of sponging upon the consumer.

Another feature in the hand method of sponging, we understand, which has tended to prevent sponging at the mill, has been that the end next to the roll would be comparatively baked and packed in its appearance, while the outside would be soft and altogether different in feel, and oftentimes in shade, when the two ends were compared.

While cloths have been injured by steaming over a perforated pipe, we understand that there is a sponging and finishing machine which gives an even finish from end to end, and also does not injure, but on the other hand is claimed to improve the appearance of the fabric, and to save unnecessary shrinkage.

If there is a machine on the market which accomplishes the purpose claimed, it would seem that mills sending their goods to the consumer ready sponged would naturally obtain a preference, other things being equal, at even a slight advance in price, as compared with goods not sponged.

New Branch Office.

The American Card Clothing Co., of Worcester, Mass., have opened a branch office at 224 Market St., Philadelphia, Pa.

Mr. A. A. White will represent the company in Philadelphia. Mr. White is well known in Philadelphia and was the company's representative at the World's Fair.

Getting Orders.

M. A. Furbush & Son Machine Co., 224 Market St., Philadelphia, Pa., have sold two blanket looms, and one self-acting mule, to Messrs. Sykes, Allis & Morehouse, Reynoldsville, Pa.

—The firm of Hood & Townsend, of Manchester, Ct., manufacturers of machine wool combs, have dissolved partnership by mutual consent. Mr. Thomas Townsend continues the business at the same address.

Talks on Loom Fixing.

V.

Continued from January.

THE "TRAMP" LOOM FIXER.

With half our mills shut down, and with hundreds of good man looking for jobs at loom fixing, weaving, etc., it seems out of place to say anything about a "tramp" loom fixer, for in reality there are now thousands of good loom fixers looking for jobs, and cannot get them, yet these men are not of the tramp class. The genuine tramp fixer is the man who at all seasons is at one moment with a charge and the next without one. These men are to be found east, west, north and south. They are disliked by all in the textile industry. They are usually what they are, in consequence of drink. They go from mill to mill, work a month, then quit. A month's pay in their pockets and they seldom stay till another pay day. These men are often good mechanics, and sometimes fix looms which no one else can, yet they are never employed as fixers by mill owners except in rare instances.

The reason is this: A good fixer is engaged to fix a section of looms. He expects to retain the job permanently. He has that idea in view when fixing a loom. Consequently he keeps the looms up to a good standard. If a part gives out he does not patch it up with strings and wires so that it may run a week or two till he quits, but he wants it to run indefinitely, so he does a good job. In this way he keeps the looms up.

The tramp fixer has no such intentions. He wants to make the loom run a week or two longer till he quits, and that is all. Thus, if one examines the looms of the first man, he will find that all of them are in good running order and proper repair. An examination of the looms of the other man will reveal many ragged edges. Wires and strings will be noticed as having been used to patch up with. Cracked picker sticks, badly worn pickers, belts breaking open, and a thousand similar defects will be seen. Weavers have cause to dread the engagement of a man of the latter kind. He will lose money for them daily. But they cannot help that. The fixer is hired by their superior and they must put up with him.

LOOM FIXING EASIER NOW.

The numerous changes for the better which have taken place in looms have done much toward assisting the loom fixer. Men who had to struggle with the old Greenhalgh loom a quarter of a century ago, find great relief in the release from tinkering with its complicated head motion and shuttle movement. The day of the old iron pegs which were used in the head motions of old, have gone by and nicely arranged steel and iron balls substituted. Old fixers who were compelled to manipulate these systems of pegs were often obliged to give more time to keeping the same in running order than they were obliged to give to the other parts of the loom combined. There are many interesting reminiscences told by men who struggled with that intricate shuttle-box motion used on the Thomas loom. The slides and the cams had to be made to work to a hair, otherwise the thing would not weave. Many hours of hard work were given up to these machines before the cloth could be woven.

Now the fixer can build a new harness chain, put it on the loom, start the shipper and away the loom will go weaving the new pattern. No changing of cams. No tinkering with levers and tappets. Indeed the progress of loom construction has been wonderful, and the loom builders of the United States deserve great credit.

(To be continued.)

—Joseph A. Hodge, one of Lowell's oldest residents, and father of the Hodge Brothers, steam specialty manufacturers of Boston, died recently at the residence of his youngest son, Mr. Albert S. Hodge, where he went to spend the holidays. He was highly thought of by a large circle of acquaintances.

The Manchester Ship Canal.

Correspondence Textile Mfg. World.

MANCHESTER, ENG., Dec. 26, 1893.

On Monday, January 1st, Manchester will commence a new phase in its career, as from that date ocean going ships will be able to penetrate into the heart of the city by means of that marvel of engineering skill, the Manchester ship canal. Already the water extends from end to end, and one steamer laden with a precious freight of directors has already conveyed its passengers with safety from Liverpool to Manchester.

It may interest the readers of the TEXTILE MANUFACTURING WORLD to have a few particulars as to the promotion of the scheme, with just a general idea of the canal as now completed.

In the summer of 1882, Daniel Adamson, a Manchester engineer, invited the Mayor, Aldermen, Councillors, and leading merchants of Manchester and neighborhood to his house to consider the practicability of constructing a *tidal* waterway from Liverpool to Manchester and to take such action as should be necessary to promote such a scheme. The idea launched at the meeting by Mr. Fulton, C. E. He recommended the making of a cutting from Manchester to a point in the River Mersey, nineteen miles from Manchester, and from there to enter the River Mersey, and so on to Liverpool. This scheme was tidal, with the result that at the Manchester end the depth of

THE CUTTING WOULD HAVE BEEN 87 FEET.

After a deal of discussion this idea was put at one side, for one in which locks figured largely. The necessary bill was deposited in the House of Commons on Dec. 15, 1882. Of course, such a gigantic undertaking could not be got through Parliament without severe opposition, and it got it with a vengeance. Railway companies, canal companies, and dock boards united to obstruct the measure by all the means in their power, both fair and foul.

Some slight technical flaw in the plans gave color to the statements of the objectors, and for a time threatened to wreck the bill at the outset. But so strong was the feeling in its favor (there being nearly 300 large petitions presented to support it), that Parliament referred it to a select committee. This committee discussed the measure for 39 days, during which time the canal promoters consented to purchase the Bridgewater canal, thus preventing any further opposition on that score.

IRREGULARITIES OCCURRED

and the bid was thrown out. However, after some delay, the third time the bill was presented it received the sanction of Parliament and became law on the 5th of August, 1885.

During the progress of the bill through Parliament the time of the committee was taken up to the extent of 175 days, and the questions and answers of witnesses amounted to 175,872. The first prospectus declared the capital to be £8,000,000, with permission to borrow an additional £2,000,000. Much difficulty was at first met with in raising the necessary capital, before the work could be commenced; but this being gallantly overcome, the first sod of the canal was cut on Nov. 11, 1887, by the chairman of the company, Lord Egerton of Tatton.

The work was let out by contract to Mr. T. A. Walker, who had successfully undertaken several other large schemes of a similar character. In a few months the whole length of the line of proposed canal was alive with navvies, both human and machine. Nearly 50,000,000 cubic yards of excavation had to be done, a good percentage of which was sandstone rock.

STEAM DEVILS OR NAVVIES

were put to work, which could clear 2000 tons of soil per day. There were 100 steam excavators, 173 locomotives, 194 steam cranes, 209 steam pumps. Some 70,000,000 bricks were required and 220,000 yards of masonry.

On looking at a map of the district the engineering difficulties of the scheme are more apparent. The railways crossing the canal have all had to be raised to the necessary level, in order to allow the funnels and masts of the vessels to clear them. This has necessitated very much additional engineering work, as, in order to get the gradients requisite, the deviations have had to be very long indeed, and the railway companies being no friends of the canal company, have insisted on having their wishes carried out to the letter. Highways have had to be treated the same; some of them, though insignificant in character and size, have had in their importance of opening a wide canal, to be constructed on quite a grand scale, for safety's sake.

The smaller canal crossing the ship canal near Manchester is carried over on a swinging caisson, which when turned to allow the traffic to pass down the ship canal supports the water contained on the bridge by a very ingenious process. This is considered one of the greatest engineering feats of the whole canal.

EVERYTHING WENT FAIRLY WELL UNTIL 1890

when it was found that the whole of capital subscribed had been absorbed. This was the crisis in the undertaking. After some delay, however, the Manchester Corporation gallantly came forward and advanced the company £3,000,000, which, with £2,000,000 advanced later, enabled the compnny to complete the work.

Thus the canal cost one-half as much again as was estimated. In its entirety, the canal is 35 miles long, with five sets of locks at Eastham, Latchford, Irlam, Barton, and Manchester respectively. The largest lock at each point is 100 feet long. The minimum width at the bottom is 120 feet and the depth is 26 feet. The time occupied in passing through each lock is five to seven minutes. There is seawater up to Latchford, which town is 16 miles from Manchester, the upper portion of the canal being supplied with water from the Irwell, Mersey, and other minor streams.

The dock space at present completed is very considerable. The Manchester end Talford docks cover an area of 104 acres, most of them being in Salford; these having a quay length of 3 1-2 miles. There are also seven acres of docks at Warrington, which is midway between Manchester and Liverpool. Such is a rough outline of the progress of the undertaking; its economical position may receive treatment in a future article.

GRENVILLE.

The Effect of an Indorsement.

Prepared for the Textile Mfg. World.

Literally, this word means only that one thing is on the back of another. As applied to legal documents, it means a writing on the back of a written instrument, and is often used in this last sense in relation to documents of various kinds. Thus it is said, that conditions, agreements, or information given are indorsed upon a policy of insurance, or a discharge is indorsed upon a mortgage deed. But in relation to notes and bills this word has a limited and technical meaning. Its exact and legal, as well as mercantile sense, is the transfer of a negotiable note or bill by the indorsement of some person who has a right to indorse.

Nor can there be an indorsement in this sense of the word, except by the payee of the bill; but he may be the original payee, or he may have become by previous indorsement a second or subsequent payee.

An indorsement may be said to operate both as an assignment and as a guaranty.

IT DIFFERS FROM AN ASSIGNMENT

in that an indorsee may bring an action in his own name, and an assignee can not; or, if he can by statute, as in some states, he is still subject to the defences which might be made against the assignor.

An indorsement differs from a guaranty, in that a guarantor is not generally discharged by the absence of delay in demanding payment or in giving notice of non-payment, without some evidence that he has been injured. An indorser may be regarded as in some sense a surety; but one who is technically a surety on promissory paper is generally an original promisor, and primarily liable, which an indorser never is.

The indorsement by a payee makes a transfer of the note to the indorsee, so far that the common language of the law and of merchants is that such a note or bill "was indorsed to B.," and it is seldom said "was transferred by indorsement," unless there is some especial reason for this language, because the transfer is implied in the indorsement. Although only he can indorse who is originally payee, or has been made payee by indorsement to him, yet the owner of a note may obtain, as an accommodation or otherwise,

ANY NUMBER OF INDORSEMENTS

by persons who have as yet no connection with the paper, but are willing to add their credit to it. In the theory of the law, each one of these indorsers held the note by a previous indorsement to him. And this theory must be carried out when either of these indorsers is sued.

It is carried out, in practice, by means of the rule, that every holder of a note having on it a blank indorsement, or a name with nothing attached to it, may write over this name anything he knew to be consistent with what he knew to be the purpose of such indorsement. Instruments are frequently made by persons who are not payees or indorsees, and such indorsement will make one a maker or guarantor, according to the circumstances of the case and the law of the place where it is made.

An indorsement may be made by one who is practically incapacitated.

AN INFANT MAY INDORSE A BILL,

and the indorsement will have the effect of transferring the paper so far that title may be made through the infant. But such indorsement will not hold him liable, nor will it pass the property in the note out of him as against his interest.

A married woman is more completely incapacitated. Her indorsement neither transfers the paper nor makes her liable, because the property in the note is in the husband, whether it was given to her before or after marriage. The husband alone can indorse, but may employ her as his agent; and her authority may be inferred from his promise to pay it, or from any competent evidence of custom; and if she has such authority it is a sufficient execution of it, if she indorses the note with her own name. If the husband has not reduced the note to his possession, on his death the property in it reverts to the wife.

If a note is indorsed by a person who is not payee, but bears the same name, such indorsement, if not innocent, is

A FORGERY;

and whether innocent or not, passes no property, even to an innocent indorsee. If it is doubtful which of the two persons is in fact the payee, it may be otherwise, and evidence be admissible to determine the question. Thus when a father and son bear the same name, and it is the name of the payee, there may be a general presumption that the father is the payee. But the presumption must be slight, and may be rebutted by proof that the son brought the action on the note, or by any sufficient evidence of possession or control on his part.

An authority to indorse a note is not an authority to indorse for the same principal a new note, when the principal has been discharged on the former note by want of demand or of notice.

An authority to sign and indorse notes at a certain bank gives no authority to sign or indorse notes at any other bank.

An authority to draw is not an authority to indorse.

A corporation may authorize an agent to indorse by vote, or a vote of the directors, if it falls within their duty, and a cashier of a bank or similar corporation would be presumed to have this power.

If an indorsement is made to an agent, the legal interest vests in the principal, who may claim it in any way he pleases. But as to every one but the owner, the agent is the holder, and only the agent can indorse it over, if the principal is no party to the paper.

Official Tests for Textiles.

Our editorial on this subject in December issue has aroused some interest, and we have received several letters commending the idea. One large New York importer and yarn dealer writes to remind us that there is already a conditioning house on Mercer St., New York. We were aware of this, but had always supposed it was almost wholly used for silk goods, and on investigation find that it is not used to any considerable extent for tests for cotton and woolen fabrics. This dealer says that in fifteen years' experience in various European centres he has found that wherever conditioning houses existed, trade worked more satisfactorily for both dealer and manufacturer. The latter has no latent suspicion that he is paying for water at the price of silk or wool, and the honest dealer is enabled to hold his trade against the dishonest one, who reduced his price say three per cent. by delivering his yarns loaded up with five or six per cent. of extra moisture.

We think that in centres like New York and Philadelphia, the more general use of the existing conditioning houses, or if necessary, the establishment of new ones under official sanction of the manufacturers' trade organizations, would be an important steps towards eliminating some of the apparently unavoidable friction in the trade.

—We have received the first number of the *Knitters' Circular and Monthly Record*, of which James Henry Quilter of Leicester, England, is the publisher. Mr. Quilter is well known in the knitting industry of England through his connection with the technical schools, and by his authorship of several technical works on knitting. The Knitters' Circular, while at present not a trade journal in the ordinary interpretation of the term, is ultimately intended to become the organ of the British hosiery trade. It is now published in connection with Mr. Quilter's technical bureau, and Mr. Quilter's popularity in the trade is well shown by the liberal advertising patronage carried by the Circular, and he will undoubtedly add to its value in each successive number.

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FULLER'S SHRINKAGE TABLE.

Inches to be Shrunk per Yard.	To Finish 20 Oz.				To Finish 21 Oz.				To Finish 22 Oz.				To Finish 23 Oz.				To Finish 24 Oz.			
1	D	F			C				B	D										
	24	25.5	..	..	24.5	..	..	..	25	26.5	..	..	..	..	..	..	..	..	..	..
4	A	B			A	C	F		C	F			B	D	E		E	F	G	
	22	22.5	..	..	23	26	26.5	..	25.5	28	..	..	26	27.5	28.5	..	29.5	30	31.5	..
4½	A				E	D			A	E	G		A	C	G		B	D		
	24.5	..	..	..	23.5	25	..	..	24	27	28.5	..	25	26.5	30	..	27	28.5	..	..
1	C	D	F	G	C	E			B	D	F		B	D	E	F	A	C		
	23	23.5	25	26	24	25.5	..	..	24.5	26	27.5	..	25.5	27	28	29	26	27.5	..	..
1¼	A				A	F	G		A	C	E		G				D	E	F	G
	21.5	..	..	..	22.5	26	27	..	23.5	25	26.5	..	29.5	..	..	..	28	29	30	31
1½	B	E	G		B	D			D	G			A	C	E	F	A	B	C	
	22	24	25.5	..	23	24.5	..	..	25.5	28	..	..	24.5	26	27.5	28.5	25.5	26.5	27	..
1¾	C	D	F		C	E			B	F			B	D			E	F	G	
	22.5	23	24.5	..	23.5	25	..	..	24	27	..	..	25	26.5	..	..	28.5	29.5	30.5	..
2	A	B			A	D	F		A	C	E		C	F	G		B	D		
	21	21.5	..	..	22	24	25.5	..	23	24.5	26	..	25.5	28	29	..	26	27.5	..	..
2¼	E	G			B	G			B	D	G		A	E			A	C	E	G
	23.5	25	..	..	22.5	26.5	..	..	23.5	25	27.5	..	24	27	..	..	25	26.5	28	30
2½	C	D	F		C	E	G		C	E	F		B	D	F	G	B	D	F	
	22	22.5	24	..	23	24.5	26	..	24	25.5	26.5	..	24.5	26	27.5	28.5	25.5	27	29	..
2¾	A	G			D	F			A	G			C	E			F			
	20.5	24.5	..	..	23.5	25	..	..	22.5	27	..	..	25	26.5	..	..	28.5	..	..	..
3	B	C	E		A	B	E		B	D	F		A	D	G		A	C	E	G
	21	21.5	23	..	21.5	22	24	..	23	24.5	26	..	23.5	25.5	28	..	24.5	26	27.5	29.5
3¼	D	E			C	G			C	E			B	F			B	D		
	22	23.5	..	..	22.5	25.5	..	..	23.5	25	..	..	24	27	..	..	25	26.5	..	..
3½	A	G			A	F			A	D	F	G	A	C	E		A	C	E	F
	20	24	..	..	21	24.5	..	..	22	24	25.5	26.5	23	24.5	26	..	24	25.5	27	28
3¾	B	E			B	D	E		B				D	G			G			
	20.5	22.5	..	..	21.5	23	23.5	..	22.5	..	..	..	25	27.5	..	..	29	..	..	..
4	C	D	F		C	F	G		C	K	G		B	C	E	F	B	D	F	G
	21	21.5	23	..	22	24	25	..	23	24.5	26	..	23.5	24	25.5	26.5	24.5	26	27.5	28.5
4¼	E	G			D				A	D	F		A	D	G		A	C	E	
	22	23.5	..	..	22.5	..	..	..	21.5	24.5	25	..	22.5	24.5	27	..	23.5	25	26.5	..
4½	A	B	C	F	A	B	E	G	B	E			B	F			B	D	F	G
	19.5	20	20.5	22.5	20.5	21	23	24.5	22	24	..	..	23	26	..	..	24	25.5	27	28
4¾	D				C	F			C	G			G	E			C	E		
	21	..	..	..	21.5	23.5	..	..	22.5	25.5	..	..	23.5	25	..	..	24.5	26	..	..
5	E	G			A	D	G		A	D	F		A	D	F	G	A	G		
	21.5	23	..	..	20	22	24	..	21	23	24.5	..	22	24	25.5	26.5	23	27.5	..	..
5¼	A	B	F		B	E			B	E	G		B	E			B	D	F	
	19	19.5	22	..	20.5	22.5	..	..	21.5	23.5	25	..	22.5	24.5	..	..	23.5	25	26.5	..
5½	C	D	G		C	D	F		C	D	F		C	G			A	C	E	
	20	20.5	22.5	..	21	21.5	23	..	22	22.5	24	..	23	26	..	..	22.5	24	25.5	..
5¾	E				K	G			A				A	D	F		D	F	G	
	21	..	..	..	22	23.5	..	..	20.5	..	..	..	21.5	23.5	25	..	24	26	27	..
6	F				A	B			B	C	E	G	B	C	K		B	C	E	
	21.5	..	..	..	19.5	20	..	..	21	21.5	23	24.5	22	22.5	24	..	23	23.5	25	..
6¼	A	B	C	G	C	D	F		D	F			D	F	G		A	G		
	18.5	19	19.5	22	20.5	21	22.5	..	22	23.5	..	..	23	24.5	25.5	..	22	26.5	..	..
6½	D	E			E	G			A	E	G		A	B			B	D	E	F
	20	20.5	..	..	21.5	23	..	..	20	22.5	24	..	24	21.5	..	..	22.5	24	24.5	25.5
6¾	E	F			A	B	F		B				C	E	G		C	G		
	18.5	21	..	..	19	19.5	22	..	20.5	..	..	..	22	23.5	25	..	25	26	..	..
7	A	C	D	G	C	D			D	F	G		D	F			D	F		
	18	19	19.5	21.5	20	20.5	..	..	21.5	23	23.5	..	22.5	24	..	..	23.5	25	..	..
7¼	E	F			E	G			E	F			B	E	G		B	C	K	G
	20	20.5	..	..	21	22.5	..	..	22	22.5	..	..	21	23	24.5	..	22	22.5	24	25.5
7½	B				B	C	F		B	C	D		C	D	F		D	F		
	18	..	..	..	19	19.5	21.5	..	20	20.5	21	..	21.5	22	23.5	..	24	24.5	..	..
7¾	C	D	G		D	G			E	G			E				E			
	18.5	19	21	..	20	22	..	..	21.5	23	..	..	22.5	..	..	..	23.5	..	..	..
8	E				E	F			F				C	F	G		C	F	G	
	19.5	..	..	..	20.5	21	..	..	22	..	..	..	21	23	24	..	22	24	25	..
8¼	F	G			C	G			C	D			D				D			
	20	20.5	..	..	19	21.5	..	..	20	20.5	..	..	21.5	..	..	..	22.5	..	..	..
8½	C	D			D	E			E	G			K	F	G		E	G		
	18	18.5	..	..	19.5	20	..	..	21	22.5	..	..	22	22.5	23.5	..	23	24.5	..	..
8¾	E	F			F				F				D				D	F		
	19	19.5	..	..	20.5	..	..	..	21.5	..	..	..	21	..	..	..	22	23.5	..	..
9	G				D	G			D	G			K	G			E	G		
	20	..	..	..	19	21	..	..	20	22	..	..	21.5	23	..	..	22.5	24	..	..
9¼	D	E			E				E	F			F				F			
	18	18.5	..	..	19.5	..	..	..	20.5	21	..	..	22	..	..	..	23	..	..	..
9½	F				F	G			G				G				E	G		
	19	..	..	..	20	20.5	..	..	21.5	..	..	..	22.5	..	..	..	22	23.5	..	..
9¾	G								E				E	F						
	19.5	..	..	..	..	..	..	..	20	..	..	..	21	21.5	..	..	..	..	..	..
10					E	F			F				G				F	G		
	..	..	..	..	19	19.5	..	..	20.5	..	..	..	22	..	..	..	22.5	23	..	..
10¼	E	F	G		G				G											
	18	18.5	19	..	20	..	..	..	21	..	..	..	..	..	..	..	..	..	..	..
10½													F	G			F			
	..	..	..	..	..	..	..	..	..	..	..	..	21	21.5	..	..	22	..	..	..
10¾					F				F	G							G			
	..	..	..	..	19	..	..	..	20	20.5	..	..	..	..	..	..	22.5	..	..	..
11	E	G			G															
	18	18.5	..	..	19.5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11¼													G				G			
	..	..	..	..	..	..	..	..	..	..	..	..	21	..	..	..	22	..	..	..
11½					G				G											
	..	..	..	..	19	..	..	..	20	..	..	..	..	..	..	..	..	..	..	..
11¾	G																			
	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Directions for Use of Table.

The estimated percentage of loss sustained in finishing is indicated by the letters A, B, C, D, E, F and G, denoting respectively, 10, 12½, 15, 17½, 20, 22½ and 25 per cent. of loss. Thus A=10%; B=12½%; C=15%; etc. The figures at the head of columns show the finished weight wanted, and the column to the left give the number of inches to be shrunk per yard. The body of the columns represents the weight per yard from the loom, and immediately above them, the letter, gives the percentage of loss.

To find the number of inches to be shrunk per yard, it is necessary to know the per cent. of loss likely to be sustained, the greasy weight and the finished weight wanted.

If for instance the goods weigh 23 oz. from the loom, and require to finish 24 ounces, and the loss to be sustained is 25 per cent., look in column 24 until you find 23 with 25 % loss indicated thus by (G) 23, and the number of inches found on the same line is the amount to be shrunk. Thus 23 is in line with 10, consequently goods will have to be shrunk 10 inches per yard to give 24 oz. finished.

[We will furnish this table, printed on heavy cardboard, by mail postage paid, on receipt of 30 cents in (2c) stamps.]

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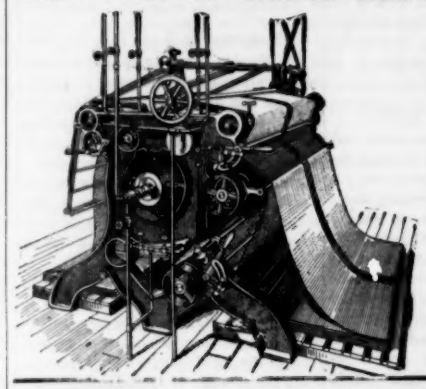

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"Woolen Spinning."

We have received a new work with the above title, by Charles Vickerman, author of "The Woolen Thread," and "Notes on Carding." This volume is intended for a text book, suitable for students in technical schools and colleges, as well as for practical men in the woolen mills.

In the preface Mr. Vickerman expresses his opinion that woolen manufacturing is not conducted on the same scientific principles that have governed cotton manufacture, and that the principles which underlie the early processes of manufacture are not as thoroughly understood, or at least so thoroughly followed, as they ought to be, and it is the object of his book to re-state some of these principles in a form that may be readily understood.

The different chapters of the work take up in sequence the consideration of the raw material, different kinds of stock, and their characteristics. He then goes on to treat of wool sorting, wool scouring and drying, bleaching and extracting, wool dyeing, teasing, willeying, burring, mixing, oiling and carding. Then follow chapters on spinning, giving its history, the underlying principles, the progress made in the art, with chapter on the self-acting mule and fancy twists. The subject of worsted drawing and an explanation of the worsted thread are included.

The work is profusely illustrated with outline drawings and illustrations of the different machines and parts of machinery which are described in the text. It admirably fulfils its mission of a text book, as it presents the proper combination of theory with practice. It states clearly the fundamental principles, and demonstrates the proper application to a mill system. From a typographical standpoint, the book is beyond criticism, being printed on good heavy paper, and in clear type.

It is published by Macmillan & Co. of London and 112 Fourth Ave., New York. Price is $1.75. We can sincerely advise its purchase by anyone interested in the subject, as we think it covers the ground clearly and fully.

Watchman's Clocks.

Watchman's clocks have become a recognised necessity in every mill and factory, though many have refrained from adopting them on account of their expensiveness and because of the difficulty in finding one which the watchman could not tamper with. To meet these requirements E. O. Hausburg of 41 Maiden Lane, New York, has placed upon the market a clock called the "Alert" (see page 23) which he will send to any reliable house on thirty days' trial and guarantee that not even an expert mechanic can make it to mislead.

This company have just received a flattering testimonial from the New England Insurance Exchange which endorses the "Alert" on the above-mentioned points, they having one in their office. This clock was awarded a first prize at the World's Fair.

Mr. Hausburg has just published a valuable card showing the difference in time between New York and various cities of the world which he will send free on application.

—W. C. Nisbet, formerly of Waldoboro, Me., has accepted a position as overseer of weaving with the Stony Creek Woolen Co., Rochester, Mich.

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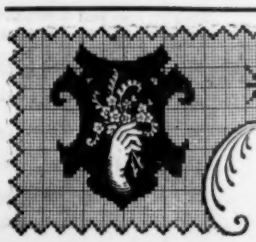


JACQUARD DESIGNERS AND CARD CUTTERS. FREDERIC HAND & CO., 157 & 159 Van Houten St., - PATERSON, N. J.

COTTON DEPT.

Ginghams.

For the Textile Mfg. World.

PREPARING THE WARPS FOR THE LOOMS.

When the quality, colors, etc., of the proposed ginghams have been decided upon, the order is given to the dyer to dye so many warps, such and such colors and shades.

After passing through the dyer's hands, it is delivered to the dressing room to be prepared for the looms. Up to the dressing room the method of getting the work through is about the same in all mills; it may differ in small details, such as the length and number of ends it is deemed advisable to run in the warps, in order to get the greatest economy both in the dye house and subsequent operations, but substantially the methods of making the warps are identical in mills on this class of goods in different sections of the country.

But in the dressing room there are

TWO DIFFERENT METHODS

of preparing the work for the loom. In brief, by one system, the yarn is run through the slasher on to the loom beams, and in the other system the yarns are sized in the chain, and then they are wound on to the loom beam on a beaming machine.

In the first method the required number of ends of each color to form the desired pattern is wound by a beaming frame on to the slasher section beams, which are then placed behind the slasher; the ends are taken through the size boxes and then taken round the drying cylinders, or on a hot air slasher, through the chambers heated by coils of steam pipe. After being dried, the yarn passes on to the loom beam upon which it is wound. While passing from the drying cylinders to the beam the yarn passes over the lease bars, which are used to separate the threads, on then through the slasher comb, which guides it on to the beam.

On the regular slasher for gingham work there are usually

TWO SEPARATE SIZE BOXES.

The white and very light shades are run through one box, and the dark colors through the other. If both dark and light colors are run through the same size box, the dark colors will tinge the size, and the light colors will show this dark size.

On the coarser kinds of work some manufacturers claim that the hot air slasher is the only kind to use, because when dried by the hot air, the thread retains its roundness, while the method of drying it on cylinders tends to flatten out the portion that comes in contact with the cylinder. But this theory does not seem to be borne out very well in practice, and the style of slasher adopted as a rule is dependent upon the style of machine to which the man has been accustomed.

In the second method of preparing the yarn for the loom, the warps containing the required number of ends are placed back of

THE BEAMING MACHINE;

they are then passed around drag pins, in order that the drag on each section can be kept alike. This is necessary in order to have them run on evenly; while being wound on, the beamer notices how the cut marks are coming up, and should one warp be running ahead of the others, he puts a little more drag on it, or takes some off, should it be running behind.

From the pins the yarn passes to the drag rolls, which are weighted by drag straps and levers, so that the tension can be regulated to suit the work being run. From the drag rolls the yarn goes to the beam, and the distance that the drag rolls are placed from the beam has quite an influence on the way the yarn opens. Sometimes either from there not being sufficient room, or else to suit some one's idea, this distance is made very short, so that the yarn does not have a fair chance to open before it gets to the rave or reed. I have found sixteen feet a good distance to set them, and on some classes of work would recommend a greater distance say eighteen feet.

In some mills a coarse rave or reed is used to guide the yarn on to the beam, in others the yarn is drawn through a reed; this last way is adopted where it is especially desirable to open the yarn as thoroughly as possible, and although it makes the cost of the beaming department come a bit higher than the common method, its good effects are shown in the way the warps work in the looms.

I have seen them in some mills where they used a reed to run the yarn from, take a stiff bristle brush and run it back from the reed, so as

TO OPEN THE YARN

as well as possible, then run the reed back as far as the warp has been opened by the brush, then the length of warp so treated is run on the beam, the beamer stopped and the same operation repeated. It is rather a slow and expensive way, but the results are good.

A good many of the beamers as now built have a stationary expanding comb, similar to those used on warpers and slashers, and by using them, better wound beams are turned out on the average than when the yarn is guided solely by the rave in the hand of the beamer. A good man, of course, will do good work by any method, but in the hand of a careless beamer, the rave makes a good many poorly wound beams; it is so very easy for him to shift it a little and have the yarn pile up on one side against the beam head, while the other side will be low.

There are, of course, a number of

DIFFERENT STYLES OF BEAMERS

made, but they may be divided into two kinds; in one, the loom beam is driven by a dog from the driving shaft, and in the other, it rests upon a dividing drum. The latter style of beamer is very seldom seen here, but it has one great advantage over the other style, inasmuch as on it the yarn is wound at a constant speed without the adjusting of gears or changing belts from one cone to another on a set of step cones.

Whatever style of beamer is adopted, however, the great thing is to have a good system of doing the work and have it followed. When a beamer slights his work, it means extra trouble for the weavers every time. The habit of letting a lost end go sometimes to save the trouble of finding it, and also of twisting the ends instead of tying them, are habits that should be stopped. To save himself work, a lazy man will tie up a smash any and every way, so long as he gets the ends joined together; he doesn't care whether they are the proper ones or not. But in the majority of cases, the men will do pretty good work where they are not driven too hard, and expected to turn off more work than they can really do justice to.

MITCHELL.

(To be continued.)

Improvements at the Harmony.

Many extensive improvements have recently been made at the Harmony Mills, Cohoes. The improvements were made in the carding, spinning and weaving departments. While considerable new machinery was addded, the greatest work has been in rearranging the machinery in so economical a way as to gain a large added floor space, and make considerable saving in power, while adding to the actual amount of machinery to be driven. The carding, which was in several rooms, has been concentrated at one end of the mill. This includes slubbing, speeder and drawing frames, and 30 new Platt improved cards, which take the place of 160 old cards. The spinning has also been brought into one room, and they have added to their 79 frames 7 new Mason's of 240 spindles each. It formerly occupied four rooms, but with the new arrangement their spinning room is something to be proud of.

These improvements have been made without any loss of running time or speed of the mill or looms, and were conducted under the supervision of Mr. David J. Johnson. By changing things around thus, floor space has been gained without building, to accommodate 120 more looms.

Chats on Cotton Combers.

For The Textile Mfg. World.

I.

"Our comber man has got through. Do you know of any one to take his place?"

"I think George H—, the oiler, would make a good man. He is quick to learn, very industrious and would soon pick it up."

"Very well, I will try him."

The above conversation took place between the overseer and the second hand of the card room in a large mill in Massachusetts.

George goes to work, and gets along very well for a few days.

One day when he is busy, a combertender takes advantage of the fact, and keeps on cleaning unmindful of the front of her combers. Some one calls her attention to one of them. She finds a big roller lap on the feed roller, the needles all broken out of the cylinder, and a stand broken. She tells George, and while he is examining it the overseer comes up. He gives the girl a short reprimand for her negligence, and then tells George to take out the cylinder, and get a new one, also a new stand from the repair shop. After George comes back,

THE OVERSEER EXPLAINS

as follows:

"The lap on the roller gets so large that it does not allow the nipper to come down on the cushion plate, thus bringing the part where the springs are fastened to the cradle against the stands, before the cam has lifted the rods to their highest point, and the stand breaks, sometimes both stands.

"Now," says the overseer, "take the caps off the stand that is broken. Then take off the springs, take the pins out of the tops of the four rods (two on each side of the stand), then take the two cushion plates off, raise the cradles up, and take the broken stand out.

"Again raise the cradles and slide new stand in. Put cushion plates in and set them by small set screws at the back of the cradles to the lip of nipper to the thickness of a piece of paper.

"Turn the pulley until index finger points to 7, which brings middle of segment under the nipper. Then fasten the stand so that both ends of the cushion plate are same distance from the fluted detaching roller. Then by means of adjusting set screws that rest against the stands set cushion plate 1 1-4 inches from fluted detaching roller. Put 5-16 step gauge between adjusting set screws and stand, thus giving nipper and cushion plate a downward and backward motion.

"Set nipper to segment to 19 gauge, by turning set screws on stands up or down as it may require, having first taken the precaution to loosen the check nut on the side of the stands.

"Keep in mind that moving the nippers up or down changes the distance between the cushion plate and the fluted detaching roller, and vice versa; but, by setting them alternately as above, they will gradually come to their respective settings. Then tighten up the check nuts. Next put the pins in and loosen up the nuts on the rods.

PUT IN THE NEW CYLINDER,

and be careful that none of the needles are high enough to strike the fluted detaching roller. Put the springs on, turn the top nuts up about 3-8 of an inch, draw the springs down, and tighten up the bottom nuts.

"Turn the pulley until the first row of needles is under the nipper. Look at the cam, and see if the rods are at the highest point; if not, adjust it. Put 5-16 step gauge between stand and set screws, and tighten top nuts on the rods until the step gauge falls out, then fasten the bottom nuts.

"Try the needles to the nipper with 19 gauge; if any are high, draw the nippers off. Repeat this process with the other cradle or they may both be set together. Set top combs to segment to 19 gauge by set screws on top, also adjust set screws at the back of top combs to the thickness of a piece of paper. By so doing, all the top combs will lift together."

NEEDLES HOOKED.

"That comber over there looks as though the needles were hooked. The cylinders are full of bunches," remarked the overseer.

"I thought so myself, and got my pliers to straighten them out; but they seem to be all right," replied George.

"Very well, we will examine it. Those brushes seem to be off a little; set them up."

George sets them up, and the next day complains to the overseer that the needles are as bad as ever.

"Well, George, I will look at them; I think the brushes are running too slow. They are running on the lowest speed.

"You see, on the Dobson and Barlow combers there are three gears cast in one piece. The first gear has 20 teeth, the middle one has 34 teeth, and the other 28 teeth. There is a 34 gear on the main shaft of comber, driving the triple gear, which is used both as an intermediate gear and a double carrier gear. There is also a loose collar (on the same stud as the triple gear) which, if changed from one side to the other, converts the triple gear from a double carrier into an intermediate gear, which drives a 25 gear on the brush shaft.

"The main shaft turns 315 revolutions per minute. When the brushes are new, they are about 4½ inches in diameter, but as they wear they have to be adjusted from time to time. When they are first put in they do not require to run as fast as when their circumference becomes smaller, because as the brushes wear, the surface speed becomes less, therefore we gear them like this: 34 on double carrier into 34 on main shaft, and 20 on double carrier into 25 on brush shaft (having the loose collar next to the bracket), giving the brush shaft 252 revolutions per minute, thus:

$$315\times\frac{34\times20}{34\times25}=252 \text{ rev. per minute.}$$

"When it is necessary to speed the brushes up, gear them like this: 34 on double carrier into 34 on main shaft, 28 on double carrier into 25 on brush shaft, giving the speed of brushes, 352 revolutions per minute, thus: $315\times\frac{34\times28}{34\times25}=$ 352 revolutions per minute.

"As the brushes get very small, it is necessary to change again; this time take the loose collar off, and push the triple gear against the bracket, then put the collar on, and then put the pin in the stud, thus making the triple gear into an intermediate gear, giving 428 revolutions of brushes per minute, thus: 315 ×34÷25=428 revolutions per minute."

JEFFREYS.

Copper Rolls for Calico Printers.

The manufacture of copper rolls for calico printers is an extremely fine art. When visiting the New Bedford Copper Co.'s works recently, we had the pleasure of seeing the whole system, and noted the importance of obtaining perfect uniformity in the density of the roll, a perfect finish for the surface, and its correct centering and perfect running qualities.

This company has invented special machinery for producing these rolls, and at every step of their manufacture the greatest precision and uniformity of result are attained. To begin with, the roll is cast of special composition in a solid shaft. It is then bored, reamed and smoothed inside by special machinery, after which it is forced through dies and turned and polished with the object of giving it a perfect surface or skin, as it may possibly be designated, and of the greatest uniformity and durability, so that when the pattern is engraved on the roll the smooth portion of the roll will be absolutely perfect, and also the engraved portion will be of the greatest possible durability.

In going through this establishment we were forcibly impressed by the hundreds of thousands of pounds of ingot copper from different mines piled up in their storehouses, their old yellow metal and other scrap used for mixtures in various branches, and in the extreme precision which was manifest throughout the entire establishment in the matter of making mixtures for a given purpose, in the most thoroughly uniform manner. This company does an extensive business, and in the manufacture of copper and yellow metal sheating, Braziers', dimension, bolt and bar copper, copper rollers and singe plates for calico printers and dyers, copper soldering irons, wash boiler and teakettle bottoms, cold rolled patent leveled cornice copper and cold rolled and tinned polished copper of beautiful finish.

The use of special machinery for special purposes is a feature which has enabled the New Bedford Copper Co. to produce printers' rolls of such quality, excellence and durability as to give the highest satisfaction to their customers.

SLOW BURNING MILL CONSTRUCTION.

Strength of Floors.—The following matter is epitomized from the special circular of the Boston Manufacturers' Mutual Fire Insurance Co. It is not assumed that these tables should in any way dispense with the services of an engineer in general construction, but they are convenient in many cases.

Concentration of Load.—The utmost care should be observed to select the figure giving the greatest possible amount and concentration of load as the one which may be put upon any beam or set of floor beams, and in no case should beams be subjected to greater loads than those specified, unless a lower factor of safety is warranted under the advice of a competent engineer.

Don't Paint or Varnish Beams.—Whenever and wherever solid beams or heavy timbers are made use of in the construction of a factory or warehouse, they should not be painted, varnished, oiled, filled or encased in impervious concrete, air-proof plastering or metal for at least three years, lest fermentation should destroy them by what is called "dry rot." It is, on the whole, safer to make floor beams in two parts, with a small open space between, so that proper ventilation may be secured, even if the outside should be inadvertently painted or filled.

For Concentrated Loads.—The accompanying tables apply to distributed loads, and for concentrated loads use half the figures given. Weight of floor should be deducted from the figures given in table.

Weight of Spruce, 36 pounds per cubic foot.

Weight of Southern Pine, 48 pounds per cubic foot.

Table No. 1 is computed upon a modulus of rupture of Southern pine at 2,100 pounds, using a factor of safety of six, spruce beams $\frac{7}{10}$ strength of Southern pine.

Machinery Floors.—Table No. 2 applies to floors whose strength must be in excess of that necessary to sustain the weight, in order to meet the conditions of delicate or rapidly moving machinery, to the end that the vibration or distortion of the floor may be reduced to the least practical limit. In the table the limit is that of load which would cause a bending of the beams to a curve of which the average radius is 1,250 feet. In beams supported at each end and in the middle, the deflection is only $\frac{4}{10}$ that of a beam of equal span which rests at each end, that is to say, the floor planks are 2½ times as stiff, cut two bays in length, as they would be cut only one bay in length. This shows the advantage of breaking joints in floor plank every three feet, in order that each beam shall receive an identical load. If the beams were two spans in length, they could support 2½ times as much load with equal amount of deflection, unless such load should exceed the limit of safety as found in Table 1.

Mill Columns.

Timber Posts offer more resistance to fire than iron pillars, and have generally displaced them in mill work, being preferable in many respects.

Don't Cripple.—Experiments made for this Company on the testing machine at the United States Arsenal at Watertown, Mass., show that sound timber posts of the proportions customarily used in mill work yield by direct crushing and not by crippling; the strength being directly as the area of cross section at the smallest part.

Strength.—The columns yielded at about four thousand five hundred pounds per square inch, confirming the general practice of allowing six hundred pounds per square inch as a safe load.

Square Columns are, therefore, one-fourth stronger than round ones of the same diameter, and do not interfere to any greater extent with the floor space.

Hollow Columns.—It has been the general practice to bore a hole one and three-fourths inches in diameter along the axis of the column for the purpose of reducing checking, but later methods are to leave the columns solid. It may be safer to bore the holes for ventilation, lest by inadvertence, posts made of unseasoned wood, should be painted, varnished, or filled, so as to promote fermentation, or what is commonly called "dry rot."

Cap, Base, Pintle.—There is no part of a mill where good work is more essential than at the columns. It is recommended that the cap, pintle and base be made of one piece of cast iron, instead of three, as is the present general practice.

Steam Pipes.—If the mill is to be heated by conveying steam through pipes, such pipes should be hung overhead. If the modern method, which is probably the best method, of conveying the heat through ducts in the pilastered walls should be adopted, provision will be made thereto in the construction of the mill wall.

Windows.—In a window much favored, and common in British factories of four or five stories in height, not exceeding 126 feet in width inside measurement, the lower sash is either fixed or swings on hinges, the upper sash mounted like a transom, and opening inward for ventilation.

Crinkled Glass.—Crinkled glass is now quite common for lower sashes; also, rough plate, or what is now called "rolled cathedral glass." These are translucent, but not transparent, diffusing light, making no hard shadows, and preventing glare of sunlight to such an extent that window shades are seldom required.

Stairways.—These should be made of two thicknesses of matched boards, not over four inches wide, thoroughly seasoned, fastened together at right angles with clinched nails. Tin plates should cover the doors, being lock jointed, and nailed under the joint, bending the sheet around the door so that there are no seams at the edge. All fixtures should be secured to the door by carriage bolts, and not by screws, and all fixtures which are attached to the buildings should be firmly bolted to the walls. These doors are usually hung on inclined tracks, with pitch of about 1½ inches to foot. Various devices of fusible solder are arranged, so that a counterbalancing weight may hold the door open, but when the temperature rises to 162 degrees, the link melts, thus dropping the weight which has counterbalanced the door, and the door by gravity runs on the inclined track and shuts itself automatically. Where fire doors are exposed to considerable hazard, they should be placed one on each side of the wall, and overlap the opening four inches in every direction.

Elevators should either be placed in fire-proof shafts guarded by fire doors, and covered overhead by skylights glazed with thin glass, protected underneath with wire netting, or else hatchways in each floor should be well guarded by automatic or self-closing hatches.

Belt Chambers.—All belts or ropes used for transmission of power to the various rooms, should be placed in incombustible vertical belt chambers, from which the power is transmitted by shafts through the walls into the several rooms of the factory. There should be no unprotected or unguarded openings in the inner walls of this belt chamber, and they can be covered with skylights and netting as for elevator well, the object being to provide easy outlet for smoke, heat and sparks, should fire occur.

Avoid Belt Holes.—The most important feature in slow burning construction is to make each and every floor continuous to the utmost possible extent, so that a fire originating in any one room may be confined to that room or story, if possible.

Fire Proof Ceiling.—In specially hazardous places, ceilings may be protected by plastering laid on wire lathing nailed directly against the ceiling between the timbers. Adamant plaster may be laid directly against the plank without immediate space, if put on to wooden laths cut in "dovetail" or "button" section.

Protecting Timbers.—Unless known to be absolutely seasoned, timbers should not be incased in any air-proof material, whether paint, varnish or plastering. They should be covered in with common lime mortar, laid on wire lathing, provided no skim coat of lime putty is added, unskimmed plaster not being sufficiently porous to prevent seasoning. As a rule, timbers may be left unprotected, except in very dangerous places.

Compound Timbers made by securing two or more beams or planks side by side, should be separated by places for ventilation, to make them less susceptible to decay.

Bracing Floors.—For weaving mills and other establishments, to resist vibration, lay top floor across the plank parallel to the beams, nails being driven in diagonal rows. This will brace the floors as firmly as diagonal boarding.

Edges of Floor should clear the walls ¼ inch to avoid danger of cracking the walls from swelling of the plank when laid too close. The cracks must be covered with strips or battens above and below.

Fire-Proof Floor.—Asphalt or asbestos paper should be placed between the top floor and the plank, whenever building laws will permit. Asphalt paper is considered the better material, as retarding the flow of water, as well as hindering the passage of fire.

Basement Floors can be laid solid on the natural floor, if it is dry, or on rock or cinder by covering either with a suitable layer of coal tar concrete. Upon this place an under floor of two-inch chestnut plank, then lay the top floor across the plank, and nail in the usual manner. Sills under the plank are not thought to be necessary, unless required to sustain machinery which requires to be bolted more firmly than it could be upon a board floor. In such cases, however, independent masonry foundations are usually preferred.

TABLE I.

Safe Distributed Loads upon Southern Pine Beams One Inch in Width.

(If the load is concentrated at the centre of the span, the beams will sustain half the amount as given in the table.) C. J. H. WOODBURY.

Span, Feet.	DEPTH OF BEAM IN INCHES.														
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	LOAD IN POUNDS PER FOOT OF SPAN.														
5	38	86	154	240	346	470	614	778	960	..	..	..	..	..	..
6	27	60	107	167	240	327	427	540	667	807	..	..	..	..	..
7	20	44	78	122	176	240	314	397	490	593	705	828	..	..	..
8	15	34	60	94	135	184	240	304	375	454	540	634	735	..	..
9	..	27	47	74	107	145	190	240	296	359	427	501	581	667	759
10	..	22	38	60	86	118	154	194	240	290	346	406	470	540	614
11	..	..	32	50	71	97	127	161	198	240	286	335	389	446	508
12	..	..	27	42	60	82	107	135	167	202	240	282	327	375	474
13	..	..	..	36	51	70	90	115	142	172	205	240	278	320	364
14	..	..	..	31	44	60	78	99	123	148	176	207	240	276	314
15	..	..	..	27	38	52	68	86	107	129	154	180	209	240	273
16	..	..	..	..	34	46	60	76	94	113	135	158	184	211	240
17	..	..	..	..	30	41	53	67	83	101	120	140	163	187	217
18	..	..	..	..	..	36	47	60	74	90	107	125	145	167	190
19	..	..	..	..	..	..	43	54	66	80	96	112	130	150	170
20	..	..	..	..	..	..	38	49	60	73	86	101	118	135	154
21	..	..	..	..	..	..	..	44	54	66	78	92	107	122	139
22	..	..	..	..	..	..	..	..	50	60	71	84	97	112	127
23	..	..	..	..	..	..	..	..	45	55	65	77	89	102	116
24	..	..	..	..	..	..	..	..	..	50	60	70	82	94	107
25	..	..	..	..	..	..	..	..	..	46	55	65	75	86	98

TABLE II.

Distributed Loads upon Southern Pine Beams Sufficient to Produce Standard Limit of Deflection.

C. J. H. WOODBURY.

Span, Feet.	DEPTH OF BEAM IN INCHES.															Deflection, Inches.
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
	LOAD IN POUNDS PER FOOT OF SPAN.															
5	3	10	23	44	77	122	182	259	..	..	..	..	..	..	..	.0300
6	2	7	16	31	53	85	126	180	247	..	..	..	..	..	..	.0432
7	..	5	12	23	39	62	93	132	181	241	..	..	..	..	..	.0588
8	.	4	9	17	30	48	71	101	139	185	240	305	..	..	..	.0768
9	..	..	7	14	24	38	56	80	110	146	190	241	301	..	..	.0972
10	..	..	6	11	19	30	46	65	89	118	154	195	244	300	..	.1200
11	..	..	..	9	16	25	38	54	73	98	127	161	202	248	301	.1452
12	..	..	..	..	13	21	32	45	62	82	107	136	169	208	253	.1728
13	..	..	..	..	11	18	27	38	53	70	91	116	144	178	215	.2028
14	..	..	..	..	..	16	23	33	45	60	78	100	124	153	186	.2352
15	..	..	..	..	..	14	20	29	40	53	68	87	108	133	162	.2700
16	..	..	..	..	..	..	18	25	35	46	60	76	95	117	147	.3072
17	..	..	..	..	..	..	16	22	31	41	53	68	84	104	126	.3468
18	..	..	..	..	..	..	..	20	27	37	47	60	75	93	112	.3888
19	..	..	..	..	..	..	..	18	25	33	43	54	68	83	101	.4332
20	..	..	..	..	..	..	..	..	22	30	38	49	61	75	91	.4800
21	..	..	..	..	..	..	..	..	20	27	35	44	55	68	83	.5292
22	..	..	..	..	..	..	..	..	..	24	32	40	50	62	75	.5808
23	..	..	..	..	..	..	..	..	..	22	29	37	46	57	69	.6348
24	..	..	..	..	..	..	..	..	..	..	27	34	42	52	63	.6912
25	..	..	..	..	..	..	..	..	..	..	25	31	39	48	58	.7500

Cotton Mill Management.

II.

We continue in this number the article of which first instalment appeared in December, and which originally appeared in the Indian Textile Journal of Calcutta. The system of report blanks is discussed in this instalment.

FORM No. IV.

SPINNING ROOM.

Report for.....189

Up to 12 noon.

Responsible Person's Signature.....

Ring Frames.

Frame No.	Counts spun.	Front Roller Speed per minute.	Spindle Speed per minute.	Counts of Travellers.	Ring diameter.	Class of Yarn.	Production in hanks per spindle. (indicated.)	Production in ounces per spindle. (calculated.)	Actual production, lbs. per frame.	30's average per spindle in hanks.	30's average per spindle in ozs.	Change pinion.	Twist wheel.

Mules.

Mule No.	Counts Spun.	Stretch.	Draws per minute.	No. of spindles.	Class of Yarn.	Production in hanks per spindle. (indicated.)	Production in ounces per spindle. (calculated.)	Actual production per pair of Mules, lbs.	30's average per spindle in hanks.	30's average per spindle in ozs.	Change pinion.	Twist wheel.	Rim pulley.	Gain or Drag Wheel.

Waste.

Class of Waste.	At ring frame, lbs.	At mules, lbs.	REMARKS:

REMARKS:

Number of workpeople employed in ring department=
" " mule "
Total

Monthly wages paid in ring department=
" " " " =
Total

Total lbs. of weft Yarn produced on ring =
Total lbs. of warp " " =
Total lbs. of weft yarn produced on mules=
" warp "
Total lbs.

In colum two under the heading of "Ring Frames" and "mules" the counts which *ought* to be spun are inserted. In colums 7, under "Rings" and column 6, under "Mules," the class of yarn, *i. e.*, whether twist or weft, has to be inserted. In column 9, under "Ring Frames," and column 8, under "Mules," the production in ounces per spindle, as calculated from the hank per spindle in the preceding, has to be entered.

In "Remarks" paragraph notes have to be made of any breakdowns, stoppages, falling off in production, excessive breakages of ends, bad cops, etc., etc.

FORM No. V.

REELING, BUNDLING, AND BALING ROOM.

Report for.....189

Up to 12 noon.

Responsible Person's Signature.....

Reels.

Reel No.	Class of yarn reeled, (ring or mule.)	Hours Worked.	No. of knots	Counts of yarn.	Weight of yarn reeled.	Waste Made.	Etc.	REMARKS:

Bundling Presses.

Press No.	Class of yarn.	Hours worked.	No. of bundles made.	Weight of each bundle.	Total Weight.	Count of yarn.	Chop.	REMARKS:

Baling Presses.

Press No.	No. of bales pressed.	Counts.	Weight.	Hoops.	Marks.	Total Weight.	REMARKS:

Number of workpeople employed on Reels=
" " Bundling=
" " Baling=
Total

Monthly wages paid in reeling department =
" bundling " =
" baling " =
Total...Rs.

FORM No. VI.

WINDING AND WARPING ROOM.

Report for.....189...

Up to 12 noon.

Responsible Person's Signature.....

Winding Frames.

Frame No.	Class.	No. of spindles.	Counts.	Production in lbs.	Waste made.	REMARKS:

Beaming Machines.

Machine No	Production. Length per indicated.	Yarn Counts.	Productive calculated weight	No. of beams.	Length on each.	Calculated weight of each.	Width of each.	No. of ends.

REMARKS:

Number of people employed on winding frames=
" " Beaming machines=
Total

Monthly wages paid in winding department= $
" " warping " = $
Total $

Under "Winding Frames," in column 2, must be entered the class of machine, whether drum winder, pirn winder, etc.

Under "Beaming Machines," in column 4, the weight calculated from columns 2, 3, and 9, must be inserted.

[To be continued.]

The Union Braided Cord Machine Co.

Our readers will note the prominent advertisement of this company, with offices at 76 Chauncy Street, Boston. It will be of special advantage to spinners to correspond with this company, as they can use this machine to decided advantage, whether for yarns especially prepared for this work, or for preventing the accumulation of surplus and odd lots, thus marketing their yarns in such form as to secure increased profit.

Noone Bros.

Messrs. Noone Bros., 100 Pearl Street, Boston, C. H. Noone and W. R. Noone, are associated with the Mt. Batty Mfg. Co., Megunticook Woolen Co., and Camden Woolen Co., in the manufacture of roller, jacket, washer, polishing, slasher, clearer, steaming, mining, filtering, buffing, lineng card and piano cloths, also printers' blankets, printers' tapes, horse clothing, webbing, etc.

In roller and slasher cloths and similar goods they show some remarkably fine samples, at, we understand, extremely reasonable prices, the quality of some of their lines of goods being a marked advance on anything that we have yet seen.

Both W. R. & C. H. Noone are well known in the trade, and we understand are meeting with decided success in introducing the new goods of these mills.

—G. T. Lesley, formerly superintendent of the Lakeside Cotton Mills, Burlington, N. C., has accepted a position as overseer of carding and spinning in the Aurora Cotton Mills, of that place.

—The Standard Thread Co., of Springfield, Mass., finishers and spoolers of cotton threads, report business in their line as irregular and not very brisk, and so they have found it for several months past. They were shut down during August, but are now running 9 hours per day and six days per week, with about half their force. Mr. S. L. Kenyon is the superintendent and treasurer.

—The John Rhodes Warp Co., operating 6000 spindles on satinet warps, are running full time in both their mills, though they do not report the outlook as the brightest. Henry M. Wilcox is treasurer and Oscar G. Owen, superintendent.

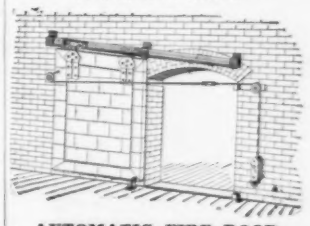
—Arnold S. Allen, of Uxbridge, Mass., has been engaged to take charge of finishing by C. T. Aldrich, Millbury, Mass.

—Thomas L. Holt is the new superintendent of the Lakeside Cotton Mills, Burlington, N. C.

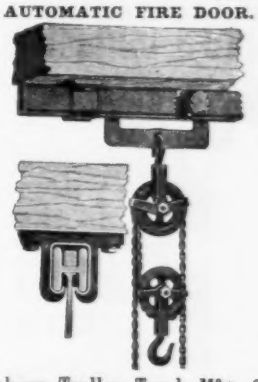
—F. Frommel, of Charlestown, Ill., has retired from the knitting business.

—T. W. Ashworth has accepted a position as overseer of weaving in the Aurora Cotton Mills, Burlington, N. C.

HICHEST AWARD
AT WORLD'S FAIR, 1893.



AUTOMATIC FIRE DOOR.



Coburn Trolley Track Mfg. Co.
HOLYOKE, MASS.

When ordering CANS
GET THE BEST.
Hill's Patent Star Bottom
Roving Cans.
made of the best IXXX Tinned sheets. Years of experience and improved methods of manufacture have enabled us to produce a Can unexcelled for strength, finish, and durability.
Hill's Patent Roving Can.
Jas. Hill Mfg. Co., Providence, Rhode Island.

SITUATIONS WANTED.

758 **Gingham Superintendent** with experience on fine dress goods and shirtings. Age 38, married, and a desirable man.

840 **Beaming or Charge of Beaming.** Has worked on ginghams, tickings, shirtings and dress goods. Age 29; married, salary as beamer $2.50; in charge $2.75.

900 **Cotton**: long and short skein, hosiery piece dyeing, and raw stock; has worked in good mills. 33 years old; married $3.50 or so per day.

805 **Spinning, spooling, slashing**, etc. Is young and capable, comes from a race of first class cotton men. Would also take a position as superintendent of yarn mill; salary moderate.

817 **Warp yarn and carpet yarns.** Nos. 5 to 18. Desires position as boss ring spinner, twister, spooler, etc. Age 24, unmarried.

1003 **A1 Spinner, Mules and Frames.** 36 years old. Has practical experience in spooling, warping and dressing.

1018 **Overseer of Mason mules** and frames. Experience in some of the very best mills. Age 39, married. Salary moderate.

807 **Second hand**, warping and spooling also in dressing, prints, shirting, sheeting, colored work.

820 **Print works or bleachery**, wants position as assistant manager of. Has had excellent experience.

925 **Extensive knowledge** in cotton carding, excellent references.

926 **Capable, bright, enterprising;** has had first-class experience as a carder; age 32, married; salary moderate.

725 **Ring spinning overseer** with experience on a wide range of goods. Age 28 and married. Salary moderate.

684 **On all kinds** of heavy or light, 2 to 5 harness goods. Reliable man; 52, married, salary about $3.00.

1001 **Has Carded** for ginghams, sheetings, checks, prints, etc., and is first class. Age 34, married. Wages $2.50 and up.

1006 **Thread, hosiery yarns**, combed and carded. Has never held overseership but second hand in first class N. E. mills. Age 40, married.

1009 **Carded for the finest threads** for fancy goods, prints and sheetings. Prefers N. E., good references.

1011 **Southern man**, carding or carder and spinner in small mill.

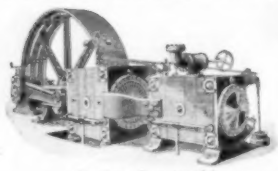
694 **Mule Spinner.** Age 41, married. Large or small room. Mason or Parr mules, any number of yarn.

902 **Fall River man**; 33 years old; married, wants position as overseer of mules. Number of years' experience as second hand in first class mills.

907 **Ring Spinning; Mule Spinning.** On the one from 4s to 150s, on the other from 4s to 120s. Good references, experience in best N. E. mills. 34; married.

ELLIOT CLOTH FOLDER AND MEASURER
For Cotton and Gingham Mills, Bleacheries, Print Works, Etc.
MANUFACTURED BY
ELLIOT & HALL,
54 1-2 Hermon St., Worcester, Mass.
Send for Circular.

FRICK COMPANY, Engineers, WAYNESBORO, PA.



(Tandem Compound.)

Eclipse Corliss Engines,

40 TO 2000 H. P., ALL STYLES.

Send for Illustrated Catalogue.

ALSO BUILDERS OF

Steam Boilers, High Speed Engines, and Ice-Making Machinery.

Steam Plants for Factories Furnished Complete.

LORD'S BOILER COMPOUND

Has a world-wide reputation.

It is endorsed by all the leading authorities everywhere.

It is adopted by the United States Government.

It is exported to all foreign countries.

It is the only American production in this line used by Foreign Governments and Navies.

It is the only article mentioned in four scientific treatises on Steam Engineering, and is highly recommended in very many of these standard works.

This should, without question, be proof of superior merits, and to prove this statement, I will send one of these valuable books, costing from $1.00 to $5.00 per copy, by mail, with each order of Compound, providing the order will warrant such expenditure; or to anyone sufficiently interested in the safety and economy in the use of steam as to help me secure trade

It will pay engineers and steam users to write me.

GEO. W. LORD, 309 Union St., Philadelphia, Pa.

ALFRED A. HUNTING, M. E.

CONSULTING AND MECHANICAL ENGINEER.

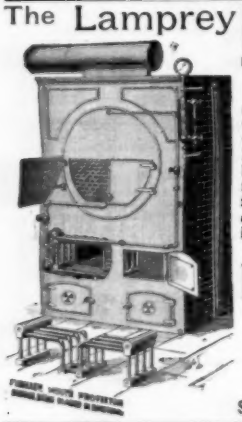
Specifications for Factories and Electric Stations

AT SHORT NOTICE.

SPECIAL ATTENTION PAID TO LONG DISTANCE TRANSMISSION OF POWER BY ELECTRICITY.

618 John Hancock Building, 178 Devonshire and 35 Federal St., - Boston, Mass.

The Lamprey BOILER FURNACE MOUTH PROTECTOR



THIS device prevents the constant burning out of cast iron cheeks and arch-plates around furnace mouths, and avoids burning the front of boiler and tube-sheet rivets, saves leakage and obviates shutting down for expensive repairs. It also utilizes a portion of the intense heat about furnace mouths for heating the feed-water, and effects a saving in fuel of from 5 to 15 per cent. over old methods of attaching cast iron plates to furnace mouths.

The Lamprey

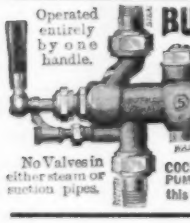
BOILER FURNACE MOUTH PROTECTOR CO.,

GEORGE L. DAMON, Treasurer.

WORKS, CAMBRIDGEPORT, MASS.

SALESROOM, 108 & 110 Sudbury St., BOSTON.

Operated entirely by one handle.



No Valves in either steam or suction pipes.

BUFFALO AUTOMATIC INJECTOR

A GRADING INJECTOR.

Construction and operation is such that water supply is always in proportion to supply of steam admitted and can be graded to feed continuously with steam from 20 to 140 pounds. Works perfectly whether lifting or taking supply from city pressure. Operated entirely by one handle, both in stopping and starting and grading supply of steam and water.

EAGLE EJECTORS, DUPLEX FLUE SCRAPERS, FELTHOUSEN GAUGE COCKS, IMPROVED GLASS OIL CUPS AND LUBRICATORS, CYLINDER OIL PUMPS, COMPRESSION GREASE CUPS, Etc. Send for Catalogue. Mention this Paper.

SHERWOOD MFG. CO., Buffalo, N. Y.

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"WILLIAMS," "DRAPER" and "SYPHON"

STEEL AND BRASS OILERS AND LAMPS.

Railroad and Mill Oilers

BEST IN THE WORLD.

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POWER DEPT.

O. B. YOUNG, M. E., Editor.

☞ **MILLS CAN SAVE MONEY**

By consulting our POWER DEPARTMENT *before buying Engines, Boilers, Water Wheels, Heaters, Separators, Eliminators, Pumps, Injectors, Traps, Damper and Pressure Regulators, Furnace Mouth Protectors, Tube Cleaners, Elevators, Clutches, Oilers, Oil, Packing, Belting and Dressing, Boiler or Pipe Covering, and other Fuel Saving Appliances.*

Indicator Practice.

W. A. MORRISON M. E.

VII.

Readers of the WORLD who have followed this series of articles on indicator practice, have noticed that the aim of the writer has been to show the great variety of conditions under which the steam engine has been operated, and the diagrams that have been shown are few, compared to the thousands that might be produced to show the vast difference between good and bad results and to what extent a faithful servant can be abused by neglect and improper management, causing a loss of time and property (which is money), very frequently life and personal injury.

These striking points so plainly exemplified in the various indicator diagrams shown, speak volumes to the thinking practical mind, and are especially valuable to the beginner who is desirous of sound practical information.

These cards were not made merely for exhibition to produce striking effects, but were selected from many in the writer's practice and can be vouched for as having been engraved correctly from the original. But as bad as many of them appear, yet there are hundreds of engines in operation to-day, that, if the indicator were applied, the result might show

MANY CASES EVEN WORSE

than any of these. A few practical lessons might be suggested to those desirous of gaining useful and correct information upon this important subject.

If the student has advanced sufficiently to have a full and proper knowledge of the terms to express the various lines and points shown upon an indicator diagram, and at the same time understanding their full meaning, having also learned the use of the indicator and has a correct appreciation of the result as shown by the card, the next thing in order is to understand the general construction of the engine with which he has to deal, particularly the movements of the valves (the speed is mostly a secondary matter); the direction that the engine is to run, whether under or over.

A fast running engine should require more lead than a slow one.

The setting of the exhaust valves has much to do with the compression; if an early closure of the exhaust takes place, much compression can be obtained in this way, thus saving excessive lead of the steam valves, and loss of direct steam.

This idea is not applicable to all engines alike; one should be familiar with the engine he has in hand, and know

WHAT TREATMENT WOULD BE BEST

for that style of engine.

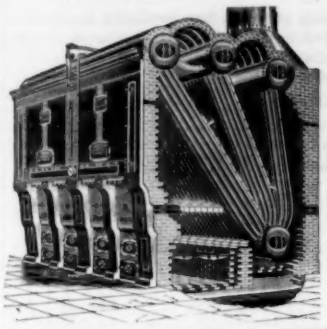
If a Corliss, the same amount of compression is not permissible as with a Buckeye or Cummer, nor on the other hand do these permit so much compression as Ármington & Sims, McIntosh & Seymour, or Ball engines.

As a rule, a positive motion cut off will permit and requires more compression than a drop motion cut off, for the reason that such engines are shorter strokes and run more revolutions per minute than the others.

If all these points are thoroughly understood the engineer is then prepared to make the necessary changes to produce the desired results.

THE "STIRLING" WATER TUBE STEAM BOILER.

Over 150,000 H. P. in use. 45,000 H. P. sold in 1892.



Absolutely safe at high pressure. Not an ounce of cast metal used in its construction. WE CAN PROVE to your entire satisfaction that the "Stirling" will give much higher average economy, with far less expense for repairs, than any boiler on the market to-day, and in proof of our claims we can refer you to some of the largest firms in the Country. Please do us the favor to investigate before purchasing elsewhere.

Prices very reasonable. Catalogues, testimonials and complete information promptly furnished.

J. BRADFORD SARGENT,

620 ATLANTIC AVE.

BOSTON, MASS.

It might be well in connection with this matter to go into the subject of expansion, and the advantages of using high pressure and dry steam.

If the pressure of the steam in the engine cylinder is 50 lbs. above the atmosphere and cuts off at one-fifth of the stroke, the rate of expansion is as five to one, and mean effective pressure would be 33.77 lbs. per sq. inch upon the piston. Suppose at same initial pressure the point of cut off should be one-half; the mean effective pressure would be 54.77 lbs. per sq. inch; double the steam has been used, but only an increase of about two-thirds of the power.

Suppose the initial pressure should be 100 lbs. per sq. inch, cutting off at one-fifth as before, the mean effectual pressure would be 59.87 per sq. inch, nearly double than when at 50 lbs.; if cutting off at one-half, the mean effective pressure would be 97.04 lbs. per sq. inch, but a little more than one-third more power.

The reason is obvious; as the steam in the last case was hotter and dryer, the condensation was very much less, and cutting off short, with dry steam produced better result.

The cost of raising the pressure from 50 to 100 lbs. was far less than double, hence the greater economy in fuel with steam at 100 lbs., medium high speed, terminal pressure about 5 lbs. above the atmosphere.

Cheap Power.

The Kingsville (Ont.) Woolen Mills get their power about as cheap as anyone we have yet heard of. In a recent communication from them, they write that they are using natural gas for steam heating, lighting and fuel, and it only costs them $25 per month. They have a two set mill, and make a fine class of white blankets, of which they turn out about 8000 pairs per year, besides a large quantity of yarn and flannel. They are about to double their present capacity, and are bringing over from Saxony a new machine for napping blankets, and when it arrives they expect to add more looms, and run day and night. They inform us that theirs is the only mill in the Dominion having the advantage of natural gas for all purposes, and that together with turning out a first-class line of goods, is probably the secret of their success.

The Big Power Transmission at Baltic, Conn.

On account of the cold weather, work has been suspended for the winter on the Baltic Power Company's building. Some three hundred feet of the granite building is up and roofed in. It stands on the same foundation that the Baltic Cotton Mill stood on and is five stories high. The dam has been raised two and a half feet, the canal wall ten feet and the bulkhead lengthened forty feet. The wheel pits were made several feet deeper and strengthened by new work. The three horizontal turbine water wheels, aggregating 1900 horse power, and the two generators, each having a capacity of 400 horse power, have been tested. Probably by the time this is read, these generators will be furnishing power by wire for the Ponemah Mills and the Norwich street railway. The Ponemah Mills, Edward P. Taft, treasurer, bought this property for a low figure some two years ago of the trustee of the A. & W. Sprague estate.

Coal Industry—The Competition with Electricity.

We are begining to get some returns establishing the relation between coal and other sources of power. First, it may be observed that the last tables of the English census show that during ten years the number of persons engaged in pursuits classed as industrial has increased 15.1 per cent. The total population in the same time increased only 11.7 per cent. Looking into details we observe the building trades increasing by only 2.1 per cent. But the numbers engaged in the coal output increases 27 per cent. A part of this increase in coal goes to supply Briton's vast and increasing sea trade. None the less, says the New York Sun, the figures establish a direct relation between the expansion of general machine industries and of coal output as their source of power.

The annual cost per horse power of a 50-horse power plant in England is $25: of a 500-horse power plant, $10.15. The same in Germany, for 50-H. P. $30; for 548-H. P. $13.50. The same in Switzerland, for 50-H. P., $47; for 500-H. P., $25.75.

On this showing the Switzers went to work to convert their water powers into electrical energy, and they have done so, both extensively and on a varied scale. The best efforts of science, ingenuity and mechanic art have been enlisted.

The cost of water horse power transmitted 3 1-2 miles by an air line is now reported to work out as follows: For a plant of 50-H. P., $58.50; 500-H. P., $25.72. In other words, on the smaller plant there is a loss; on the larger a merely nominal gain.

On this comparison, if Switzerland, or any country with a similar climate, is to make headway in competing for the world's markets, it must command a better source of power than electricity derived from water-falls. It is clearly a condition of success that the quantity of water power must be constant, as for example, at Niagara, and not liable to interruption from the rigors of winter. Add to disadvantages of this kind the necessity of keeping up a steam plant to meet the deficiency when electricity fails.

Part of the Swiss experience is said to show that where work is carried on day and night, and the power is used also to supply light, electricity can in some cases be made to take the place of coal at less cost.

Transmitting plant and its maintenance almost doubled the price. In places where this plant was not long, or only from half a mile to three miles, this item of cost was greatly reduced, and the most favorable showing obtained. At Niagara the arrangements contemplate transmission to a distance that has usually baffled Swiss enterprise. The real significance of the Swiss returns is rather in connection with the proposal to use electricity derived from water power for canal propulsion. If this is to be the success that has been hoped, it would seem that some improvement on Swiss conditions of transmission must be worked out.

—Geo. Daugherty, for the past four years superintendent of the Victor Cotton Mills, Charlotte, N. C., has resigned and accepted a similar position in the Henderson Cotton Mills, Henderson, Ky., which is the largest plant in that state, having 27,000 spindles and 615 looms.

Headquarters for ELECTRIC & PORTABLE Watchman's Clocks
Lowest Prices. Latest Improvements. Patents 1886-1893. Send for Circular.
E. O. HAUSBURG, 41 Maiden Lane, New York.

THE "ALERT."
Price, Complete $10.00

Prevention Better than Insurance.

The danger of property loss from boiler explosion is of minor importance as compared with lives endangered, hence the insurance which is most to be desired is that which gives greatest personal safety, as well as having such a record as to cause a feeling of confidence that the insurance will be good in case of accident.

Inspection of boilers in the most thorough manner ought to be best secured by those who make this a special business and a life study, as to insuring and guaranteeing their safety. No honest man wants his property destroyed, even were no danger to life incident to such destruction, hence insurance of steam boilers should be sought for to prevent explosion even more than to collect losses.

In this connection we cannot fail to admire the extreme care, safety and conservatism shown by the Hartford Steam Boiler Inspection and Insurance Co. This company, incorporated in 1866, has now in charge about 45,000 boilers, and their staff of inspectors includes considerably over one hundred trained experts.

The policy of this company has always been to most thoroughly and rigidly inspect their risks, and to constantly seek for the prevention of explosions, as well as in the training of their experts, and in the general conduct of their business the great items of expense are of a precautionary nature.

This plan of conducting business has resulted in such financial stability to the company, that while devoting all their energy to boiler insurance, and casualty loss resulting from this cause only, they have done a very prosperous business, to the advantage and security of their clients, as well as reasonable profit to the company.

Infringement of the Star Ventilator.

In the Omaha Sunday World Herald, of December 17, appears a paragraph in regard to an alleged infringement of the patent of Merchant & Co.'s Star Ventilator. It would seem that the Star Ventilator was specified for the Lincoln, Neb., Hospital for the Insane and that the contractor placed other ventilators in the building, which Merchant & Co, claimed to be infringements on their Star patents. Steps were accordingly taken to stop payment on the work, pending an investigation. The matter was duly laid before the State Board of Public Lands and Buildings, with the result that the board decided to withhold a settlement with the contractor until he had made a satisfactory settlement with Merchant & Co. We are informed that Merchant & Co. have recovered heavy damages in the case.—Metal Worker, January 6, 1894.

Standard Publications.

That the trade works published by J. D. Sheldon & Co., of New York, have become a standard feature, closely identified with the dry goods interests from manufacturer to consumer, is substantially witnessed by their long maintained position and influence in the trade. No other series of trade publications are so generally circulated or consulted in matter of reference. The large line of advertising patronage continued in their Buyers Reference Book, during the period of business depression by manufacturers, commission merchants and importers, attests the value of this medium as a direct means of reaching the buyers.

The present publishers of Sheldon's works have been over twenty years in organizing and developing a system of interchange information in the trade, and by ability, enterprise and energy, together with the adoption of a policy of confidence and direct relations with the classes of trade interested, have achieved this gratifying result.

HINTS FOR STEAM USERS.

To Find the Horse Power of an Engine.

Multiply the area of the piston in square inches (*A*) by the average pressure of steam exerted on the piston throughout its stroke, (called the mean effective pressure) (*B*); multiply this result by the number of feet the piston travels per minute (*C*) and divide by 33,000, and the answer will be the horse power.

(*A*) the area of the piston in square inches is found by multiplying the square of its diameter by .7854.

(*B*) the pressure per square inch throughout the stroke can only be accurately determined by the use of the indicator. An approximate result may be obtained without it by using the boiler pressure and deducting 60% for engine below 20 h. p.. 50% for those up to 100 h. p., 40% for those above.

If the point of cut off of the engine is known (that part of the stroke which has been gone over when the stream valve closes) the mean effective pressure may be quite accurately ascertained by the following table at

¼	stroke equals the boiler pressure multiplied by			. .	.597
⅓	"	"	"	. .	.670
⅜	"	"	"	. .	.740
½	"	"	"	. .	.847
⅝	"	"	"	. .	.919
¾	"	"	"	. .	.937
⅞	"	"	"	. .	.966
1	"	"	"	. .	.992

(*C*) the piston speed or travel is found by multiplying twice the length of the stroke in feet, by the number of revolutions per minute.

An easy way to remember this rule is to use the following equation: P. A. (Piston Area) P. S. (Piston Speed) M. E. P. (Mean Effective Pressure,) H. P. (Horse Power).

$$\frac{\text{H. A.} \times \text{P. S.} \times \text{M. E. P.}}{33{,}000} = \text{H. P.}$$

To Find the Horse Power of a Boiler.

Horse power at the best is but a relative term, used for convenience, and this is especially the case where it is applied to boilers,

It is found by dividing the square feet of heating surface in a return tubular boiler by 15 or that of a flue or cylinder boiler by 12.

The heating surface of a return tubular boiler consists of the superficial area of all the tubes and the bottom half of the shell, but in a flue boiler the superficial area of five-eighths of the shell and that of the flues is taken as heating surface. (If some thing more accurate is required, the area of the heads below the water line, less the area of the tube holes should be added.)

Example. A horizontal tubular boiler is 4 feet in diameter by 13 feet in length with 45 tubes 3 inches in diameter by 13 feet long. What is its horse power?

If of 4 feet in diameter it will have 12,566 feet circumferance, half of which is 6.28 feet. This multiplied by 13 ft. gives 81.64 feet for half the shell area. Each tube has a diameter of 3 inches, giving 9.42 inches for its circumferance, this multiplied by 156 (its length in inches) gives 1469.5 inches or (divided by 144) 10.2 square feet for the area of one tube. Multiplying by 45 we have 469 square feet as the area of all the tubes, this added to 81.64 gives 550.94 square feet for the area or heating surface. Dividing this by 15 we have for its horse-power 36.7

Economy of Engines.

Steam engines vary in economy, requiring the evaporation of from 15 to 60 pounds of water per horse-power per hour, depending upon the compounding and general economy of the machine.

Boilers well set, with good draught will evaporate from 7 to 10 pounds of water per pound of first class coal though the average result is from 30 to 60 per cent. below this.

One square foot of grate surface will consume on an average 12 pounds of coal per hour. The heating surface in a boiler should be about 30 times the grate surface. By referring to the above and noting the amount of feed water evaporation required by an engine, the size of a boiler necessary to furnish steam for it may be determined.

Horse Power of Belting.

A simple rule for ascertaining transmitting power of belting without computing speed per minute it travels is to; Multiply diameter of pulley in inches by the number of its revolutions per minute, and this product by width of belt in inches; divide the product by 3,300 for single belting or 2100 for double belting and the quotation will be the horse-power which it will safely transmit.

Table for single leather, four ply rubber and four ply cotton Belting. Belts not over loaded.

Speed in Feet per Minute.	WIDTH OF BELT IN INCHES. 2	3	4	5	6	8	10	12	14	16	18	20
	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.
400	1	1½	2	2½	3	4	5	6	7	8	9	10
600	1½	2¼	3	3¾	4½	6	7½	9	10½	12	13½	15
800	2½	3	4	5	6	8	10	12	14	16	18	20
1,000	2	3¾	5	6¼	7½	10	12½	15	17½	20	22½	25
1,200	3	4½	6	7½	9	12	15	18	21	24	27	30
1,500	3¾	5⅝	7½	9⅜	11¼	15	18¾	22½	26¼	30	33¾	37½
1,800	4½	6¾	9	11¼	13½	18	22½	27	31½	36	40½	45
2,000	5	7½	10	12½	15	20	25	30	35	40	45	50
2,400	6	9	12	15	18	24	30	36	42	48	54	60
2,800	7	10½	14	17½	21	28	35	42	49	56	63	70
3,000	7½	11¼	15	18¾	22½	30	37½	45	52½	60	67½	75
3,500	8¾	13	17½	22	26	35	44	52½	61	70	79	88
4,000	10	15	20	25	30	40	50	60	70	80	90	100
4,500	11¼	17	22½	28	34	45	57	69	78	90	102	114
5,000	12½	19	25	31	37½	50	62½	75	87½	100	112	125

To find the speed in feet per minute multiply the circumference of pulley, in feet, by the number of revolutions.

For Calculating Speed of Pulleys.

To find the number of revolutions of the driven pulley.

Multiply the diameter of the driver by its revolutions and divide the product by the diameter of the driven; the quotient will be the number of revolutions.

2. To find the diameter of the driven that shall make any given number of revolutions in the same time as the driver. Multiply the driver by its revolutions and divide the product by the number of revolutions desired, the quotient will be the diameter for the driven.

3. To find the size for a driver: Multiply the size of the driven by the number of revolutions you wish to make and divide the product by the revolutions of the driver, the quotient will be the size of the driver.

These rules are practically correct, though owing to the slip and thickness of the belt the driven seldom makes exactly the number of revolutions it should.

FUEL.

There is often required for use of boilers nearly twice as much fuel as would be necessary if the plant were of different type and more skillfully managed, the reason for this is that:

(1) The engines use too much steam to develope the power required by being either under or over loaded, generally the latter.

(2) Boilers are badly designed, improperly set or too small.

(3) Coal is poor quality or improperly housed (coal loses from *ten* to *forty* per cent. of its evaporative effect being exposed to the weather).

(4) The firemen are ignorant or careless.

Two and one-half pounds of good drywood is equivalent in evaporative effect to one pound of coal.

The usual waste of Anthracite coal is about 16 1-2 per cent. while that from Cumberland coal is only about one-half so much.

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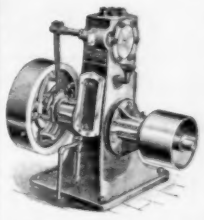
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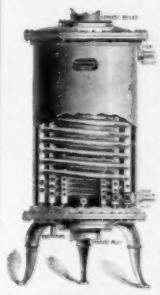
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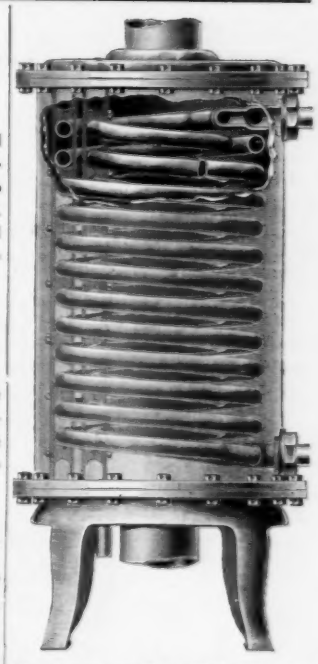
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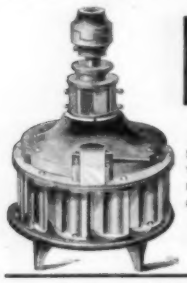

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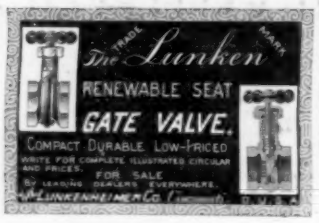

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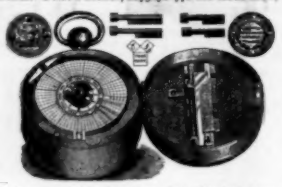

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—Wilfred A. Barbelle, overseer of spooling in the White Mill, Fall River, Mass., has resigned, and accepted a superintendency in North Pownal, Vt. Mr. Barbelle was presented with a diamond ring by his friends.

—John Cunneen, overseer of carding in the Seaconnet Mill, Fall River, Mass., was the recipient of a gold watch chain, given him by the employes under his charge.

TABLE OF AMERICAN COALS.

(Mills' Useful Information for Steam Users.)

COAL. State.	Kind of Coal.	Per Cent. of Ash.	THEORETICAL VALUE. In Heat. Units per pound.	In Pounds fo Water Evaporation.
Pennsylvania,	Anthracite,	3.49	14.199	14.70
"	"	6.13	13.535	14.01
"	"	2.90	14.221	14.72
"	Cannel,	15.02	13.143	13.60
"	Connelsville	6.50	13.368	13.84
"	Semi-bituminous,	10.77	13.155	13.62
"	Stone's Gas,	5.00	14.021	14.51
"	Youghiogheny,	5.60	14.265	14.76
"	Brown,	9.50	12.324	12.75
Kentucky,	Caking,	2.75	14.391	14.89
"	Cannel,	2.00	15.198	16.76
"	Cannel,	14.80	13.360	13.84
"	Lignite,	7.00	9.326	9.65
Illinois,	Bureau Co.,	5.20	13.025	13.48
"	Mercer Co.,	5.60	13.123	13.58
"	Montauk,	5.50	12.659	13.10
Indiana,	Block,	2.50	13.588	14.38
"	Caking,	5.66	14.146	14.64
"	Cannel,	6.00	13.097	13.56
Maryland,	Cumberland,	13.98	12.226	12.65
Arkansas,	Lignite,	5.00	9.215	9.54
Colorado,	"	9.25	13.562	14.04
"	"	4.50	13.866	14.35
Texas,	"	4.50	12.962	13.41
Washington Ter.,	"	3.40	11.551	11.96
Pennsylvania,	Petroleum,		20.746	21.47

The Fuel Value of Woods.

The fuel value of woods in comparison with coal is as follows:

1 Cord	Hickory or Hard Maple	weighs 4500 lbs.	equals	2000 lbs.	Coal,
1 "	White Oak	3850 "	"	1715 "	"
1 "	Beech, Red or Black Oak	3250 "	"	1450 "	"
1 "	Poplar, Chestnut or Elm	2350 "	"	1050 "	"
1 "	Average Pine	2000 "	"	925 "	"

In buying Anthracite coal, that quality should be selected which has a bright appearance and a conchoidal fracture. If of dull appearance and shows seams or cracks it will fly into fragments in the furnace and not prove economical.

With bituminous coal, if the fractures show a whitish film or rusty stains, they are indications of sulphur and iron Pyrites and should be rejected for furnace use.

Fuel is often wasted from the grate bars not being properly spaced.

Air Spaces Between Grates.

Lehigh Pea Coal	$\frac{1}{4}$ of an inch.
Schuykill Pea "	$\frac{3}{8}$ " "
Lehigh Chestnut Coal	$\frac{3}{8}$ " "
" Stove "	$\frac{1}{2}$ " "
" Broken "	$\frac{5}{8}$ " "
Cumberland "	$\frac{3}{4}$ " "
Wood	$\frac{1}{4}$ to 1 " "
Sawdust	$\frac{1}{16}$ to $\frac{1}{4}$ " "

To find pressure in pounds per square inch of a column of water: Multiply the height of the column in feet by .434

Every foot of elevation is called (approximately) equal to one half pound pressure per square inch.

Weight of Water.

1	Cubic in.	.03617
12	" "	.434
1	Cubic ft. (salt)	64.3
1	" "	62.5
1	Cylindrical inch	.02842
12	" "	.341
1	" foot	49.10
1	Imperial gallon	10.
1	U. S. "	8.355
268.8	" "	2240.

1 Cubic foot of water equals 7.48052 U. S. gallons.
1 Cylindrical foot " 6.0 " "

To Keep Machinery from Rusting.

Take one ounce of camphor, dissolve it in one pound of melted lard: take off the scum and mix with as much fine black lead as will give it an iron color.

Clean the machinery and smear it with this mixture, after 24 hours rub clean with a soft linen cloth.

To Back Out Bolts.

When driving out bolts, without protection for the thread, strike the hardest blow you can with a heavy hammer. Light blows with a small hammer will upset or rivet the bolt.

A permanent and durable joint can be made by the use of asbestos mixed with sufficient white lead to make a stiff putty. It will resist any amount of heat and is unaffected by steam or water.

Cast iron fly wheels should not be given a greater speed than 80 feet per second to be perfectly safe.

Vaseline will keep polished tools from rusting better than anything else.

Proper covering of a boiler and steam pipes save from twenty to thirty per cent. of the fuel.

Remember that a slight leak from a bad joint in a boiler may cause a severe local grooving.

When pumping hot water, a stand pipe open at its upper end and extending a little above the source of supply, should be connected to the supply pipe near the pump; the rising and falling of the water in this pipe will ease the pump and allow the steam rising from the water to escape freely.

When the pulsations of an engine can be seen in a boiler, the latter is too small for its work.

A thin coating of glycerine on both sides of a pane of glass will prevent the condensation of steam which would otherwise obscure it.

Care of Water Wheels.

When a mill owner buys a water wheel and puts it out of sight under his mill, he expects that wheel to "keep right along eating shad" fifty-two weeks per year, and never stop for bones. Some men have been known to purchase a steam engine, and, after once starting up, run the machine 130 hours per week as long as the engine held together. Occasionally, way back in sawmills, this sort of thing is tolerated nowadays, says a writer in the Paper Trade Journal, but the increased price of coal has induced most steam users to become progressive, even when other considerations failed to move them.

It would be barbarous to treat an engine as above described, yet water wheels are subjected to just that kind of care year in and year out. The "best wheel in the world" is purchased and dropped into the wheel pit. Nothing more is thought of that triumph of hydraulic engineering until the gears fall out of mesh, and

THE MILL STOPS RUNNING

through the burning out of a step.

Repairs, in such cases, often consist merely of a new step, a new bolt or two, and a hurry to get out of the wheel pit.

Water wheel repairs are not often called for, except to the case or penstock, but, like many other repairs, could be made valuable. A water wheel is a rusty-looking concern, not at all interesting to the owner, who too often gives it a poke with his cane, decides that it is "all worn out," and listens to the smooth-tongued agent of another "best wheel made." If the old wheel could have $10 laid out upon it for repairs, it would have done good work for ten years longer, and perhaps have delivered more power than the new wheel.

It will pay to let Mike

CLEAN THE RUST OFF

the old wheel and polish it up with a wire scratch brush, such as is used in the foundry. A vigorous use of this tool, reinforced by a cold chisel and hammer, will work such a transformation in the old turbine that its owner would even forget to give it the conventional poke with his cane.

A water wheel, once clean, should be painted with boiling hot gas tar and allowed to dry at least two hours—better two days—before being put back into the pit. The case should receive the same treatment. Lumps of rust on the chutes of turbine wheel cases do not add to the power derived from the water, and the cleaner the chutes the better the percentage available.

Bolts, nuts, gears, cranks and cams are used with turbine wheels to a greater or less extent by their builders, and these small fittings are

INVARIABLY DESTROYED BY RUST

before the larger parts of the wheel have gone bad. An agent who sees a chance to sell a water wheel will do anything under the sun to make a trade, and it does not require much talk to make him include a duplicate in the trade of every small casting about the wheel. A set of these duplicates should always be kept on hand. If within easy distance of the wheel maker's shop duplicates may be ordered when those on hand are used; but if out in the woods or 200 miles from "nowhere," make the duplicate castings into patterns and cast a supply for yourself. Your local foundry can take moulds off of the duplicate castings, provided you fill them up well and cover with melted beeswax while the iron is hot. This treatment fills all of the holes and rough places, so that the patterns thus made may "draw" without trouble.

If all this trouble to procure repairs is taken, it is of no use to keep them in the repair shop and let the turbine wear out in the wheel pit. It pays to shut out the water once in three months and

CRAWL INTO THE WHEELS.

If a man takes with him on these occasions two quarts of brains, a monkey wrench, a cold chisel and a hammer, he can crawl out of the wheel in two hours, time knowing that the turbine is many dollars better than when he went to it.

Perhaps a crank rod is broken which allows one of the gate chutes to remain

open or shut, as it may chance to lie. In this case a waste of water is taking place when the wheel is idle, or a fraction of the wheel's entire power is lost by the chute remaining closed at all times. To determine this fraction, regard the numerator as one and the entire number of chutes in the wheel, or gate, as the denominator. The segment gears, if there are any in your make of wheel, may become badly worn, and they will wear badly under water, causing only a partial opening or closing of the gate, and quite a loss of power and water thereby.

A little bolt may get loose, fall out or rust off, letting the end of a lever go loose. Perhaps this may cause a leak of water or of power, or it may cause a tremendous breakdown which might ruin the wheel, its case, and perhaps the main gears as well. The quarterly visit to the wheel enables the millwright to nip in the bud many of these incipient breakdowns. He applies new parts, and, in fact, does the repairs "just before they are needed." He prevents breakdowns by

ANTICIPATING REPAIRS.

Some well-known wheel makers attach an unmitigated nuisance to their wheels in the shape of three pieces of wood which are adjustable by set screws to the wheel shaft, a foot or two above the case. Sometimes these blocks are contained in a 10-dollar casting, so elaborately is it designed. Sometimes the blocks are put in as big as they will go, with the set screws clear back. In this case the fun begins when the wood gets swelled up big and the owner tries to start his wheel. I have known cases where these blocks pinched so tight that the wheel could not be started. The water had to be drawn off, the casting taken down and the wood split out piece by piece, until the shaft was set free. Sometimes the wood acts as above stated, but at all times, after the wheel has been run several months, the pieces of wood become so small that they do not touch the shaft, and its "wabbling" is only limited by the size of the hole through the casting.

I suppose that wheel builders have got the idea into their heads that because a wood bearing works well under the wheel, the same material will do duty alongside of the wheel shaft. Probably it will if the conditions could be made the same, but they never are, and would never give satisfaction. I have tried

A NUMBER OF DODGES

in relation to a substitute for maple or hickory wood, with various degrees of success. I tried cutting back the wood one inch and forming a dovetail thereupon, after which babbitt metal was cast upon the wood, forming a bearing of that metal upon the shaft. This worked well until the metal came off and got ground to pieces as it rattled around in the casting. I next tried making a cast-iron block and facing it with babbitt metal. This worked well. The best bearing I ever tried was made of three brasses procured from a railroad shop. The brasses were intended for the bearings to put under freight cars. The three pieces of metal happened to be of just the right shape and size to fit the wheel shaft, and they were drilled, countersunk and riveted on to a cast-iron block made to fit the holes in the bearing casting.

THE GATE RIGGING

of a turbine wheel is often guilty of much sinfulness, outside as well as inside of the wheel case. Much of this "cussedness" can be eliminated by the constant use of the monkey wrench and its brain attachment, above mentioned. Nearly all of the bother of one and one-half inch gate shafting, bevel and mitre gearing, in four or five places, can be done away with by fixing a simple drum upon the upper end of the gate shaft, and another upon the lower end of the hand-wheel shaft. A half-inch wire rope will complete the connection, and this rope may be led in any direction by the judicious use of guiding sheaves. All of the bother of shafting, its bearings and gearing can be eliminated. The wire rope can be run direct or around corners, and the multiplication of power at the hand wheel secured by different sizes of drums on the hand wheel and gate shafts. Such a rig would work splendidly on small gates, and as for big ones, nobody has any business to work them by hand; they should be operated by a small, independent turbine, and not by "donkey muscular" power.

THE WORST TROUBLE

which turbine wheels must meet gets at them through the racks, with the water, but sometimes trouble gets in between the racks and the wheel case. Racks hardly ever stay just where they are put, especially after a winter of raking, ice cutting and other troubles. I have seen wheels broken by lumber which squeezed through racks supposed to be half an inch between bars, and have seen 400 horse power wheels ruined by brickbats suddenly thrown into the flume by lazy workmen, who disposed of them thus rather than wheel them away, as ordered. A common broom from the "washer-room" has given rise to trouble and swear words when solidly wedged in a wheel used to drive a paper machine, and 250 feet of 8-inch leather belting has proved the ruin of a 54 inch wheel with very little trouble.

Among other things which turbines have broken down, steam engines are included. In this case the engine was coupled with the wheel, both working for all they were worth. The "lookout" noted the approach of the water inspector, from whose company so many "mill powers" of water are hired. Down went the gates at once to the point indicating the maximum quantity of water allowed, and down there they remained until the inspector was safely outside of the mill, once more upon his daily rounds to the other water consumers. The steam engine stood the brunt of such work, especially if the inspector was "up to snuff." Some inspectors never notice, and the engine can be favored. Once in a while an inspector comes who knows too much, and he makes it awful hard for the engine.

The whole turbine business may be

SUMMED UP

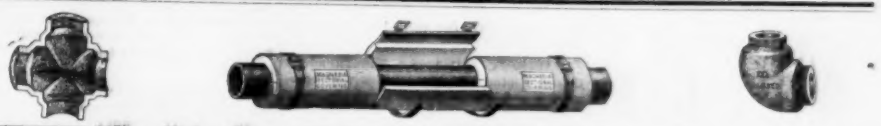
as follows: If a manufacturer would treat his water wheels half as well as all of his other machinery is treated they would do more work with less water, last longer, need replacing less frequently, and cause fewer breakdowns than they do under existing methods of careless handling. Every mill owner ought to make his millwright a New Year present of $10 or $20, with the request to pay it back by "taking care of the water wheels" during the coming year. It would repay the investment many fold.—Paper Trade Journal.

***

The preceding article serves a good purpose in pointing out how wheels are destroyed, also contains some good points which can be taken to heart by millwrights and manufacturers. The author evidently has in mind, however, a class of wheels of former years, in which an antiquated form of fly trap and register gates were used, which caused the millwrights so much trouble.

In discussing this article with an expert on water wheels, he expressed himself somewhat as follows in regard to these old style wheels. Said he, "They caused the millwrights so much trouble that I don't doubt a word on the sly to Mike, Pat or Jake was frequently the cause of a brick bat, an old broom handle, an iron rod, a monkey wrench, or a piece of old belting in some odd corner, finding its way into the wheel pit, for the very purpose of making a smashup, in order to force the manufacturer to get a better wheel and relieve them of the hard work and mental anguish caused by the old rattle traps. If there is any one thing above another that will cause a man to forget his religion and morals, it is a water wheel which refuses to yield the power required, and which is every day getting out of order, requiring the millwright and his help to get into the wheel pits, particularly in winter time."

The author of the above article is right, however, in his statement that wheels are never looked at until something breaks, and then are simply patched up as quickly as possible.



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Just the time to thoroughly cover the pipes and economize on coal. No time for "make shift" coverings either. Use the best non-conductor.

Fire-Proof Magnesia Sectional Coverings.

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NEW ORLEANS, La. The DELBERT ENG'R CO., Ltd 21 & 23 Union St. La. Miss. Ark. Texas, So. Ala.

Denver a Wool Centre.

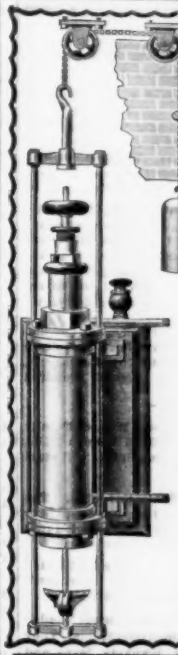
The Interstate Convention of Woolgrowers was held in Denver, Colo., on the 5th and 6th of February, to protest against the passage of the Wilson Bill, particularly the clause referring to wool. Sheep owners from Colorado, Wyoming, Nebraska, Kansas, New Mexico, Arizona, Utah and Montana were in attendance. Among other things, it was suggested that woolen mills be established in the West to utilize western wool for the supply of the trans-Missouri market for woolen goods. A special committee reported that the annual wool clip of the country tributary to Denver was over 40,000,000 pounds, comprising all grades except the finest Saxony, the whole of which wool is now shipped, mostly unscoured and at heavy freight charges, to Boston and Philadelphia, manufactured in the Eastern States and a considerable portion of the manufactured goods re-shipped West. The secretary of the Colorado Manufacturers' Exchange called attention to the fact that Denver and the tributary country annually purchases several millions dollars worth of woolen goods; that there are no woolen mills for nearly 1000 miles from Denver; that within the last three years, Eastern capital, to the extent of nearly $2,000,000, has made Denver the great paper manufacturing centre of the trans-Missouri country; that there is as good a prospect for woolen manufacturing at Denver as there was three years ago for paper making; and that the exchange is endeavoring to interest Eastern or European woolen manufacturers in the undoubted opening which exists in Colorado. The Convention by vote pledged support to any Western woolen factories which shall be established.

—We have received from the Joseph Dixon Crucible Co., Jersey City, N. J., a second edition, revised to 1894, of their pamphlet on "Graphite as a Lubricant." This presents in a most attractive and forcible manner the results of experiments conducted by well-known scientists, for the purpose of making comparative tests of the value of graphite as a lubricant when operated under the same conditions as various kinds of oil. The results are very convincing, and the opinions expressed by millwrights, engineers, and others, demonstrate the merits of this lubricating substance. These pamphlets are now ready for distribution, and a copy will be sent, free of charge, to any one interested in the subject of lubrication.

The Present Situation.

Set to "verse" by our Poetry Editor.

Happy the worker who now toils for low pay;
Far more so than he who is loafing on no pay.
Coin was our change in the year ninety-two,
The change we now have is nothing to do.
We cried for cheap goods which were made by our neighbor,
We now find cheap goods are made by cheap labor.
When our labor is all the goods we can sell,
The change we now have does n't suit very well,
And another election will pitch it to—
Where it belongs.



The Curtis Patent Damper Regulator

Is the cheapest and at the same time the

Most Reliable and Efficient

It is the only regulator which is guaranteed to change direction on a variation of one pound steam pressure.

IT WILL CONTROL ANY DAMPER.

MANUFACTURED BY THE

D'ESTE & SEELEY CO.

29 to 33 Haverhill St., Boston.

New York Office: 109 Liberty St,
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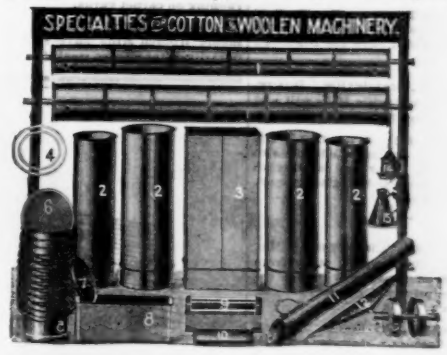
Roving Cans and Sheet Metal Mill Specialties.

The cut here shown illustrates a number of the specialties manufactured by the New England Ventilating & Heating Co., 930 Manton Ave., Providence, R. I. The construction of the cans differs materially from others, the body



and bottom resting on top part of iron ring, so that there is practically no strain whatever on the soldered parts. The seams are grooved together, making them perfectly smooth on inside, thereby adding to the rigidity of the can. This company also make tape pulleys for worsted spinning machinery, gill box cans, can rings, automatic wool oilers, loom drippers, comb spouts, card trumpets, cylinder castings, shaft oilers, lamp fillers, twister separators, etc.

—Alfred Mangnell, boss mule spinner at Border City Mill Mo. 2, Fall River, Mass., has been long absent from the mill on acount of illness, la grippe.

—The Erie Chemical Co., of Erie, Pa., is a new concern which will manufacture soda and bleach by the Le Blanc process. They will shortly begin the erection of their plant.

—E. W. Gooch, formerly at the Whittenton Mills, of Taunton, and well known at Lawrence, Mass., where he learned his trade of dyer at the Pacific Mills, is now in charge of the fine new dyeing establishment at Taunton, the Taunton Dye Works and Bleachery Co. The principal dyeing done is raw stock, and a specialty is made of fast black. They also card, and the work is done for the weaving and knitting trade.

—Thomas Somerville has resigned his position as overseer of finishing in the Beoli Woolen Mill, West Fitchburg, Mass.

—Smith Ostrander has resigned as superintendent of the Mohawk Valley Knitting Mills, Mohawk, N. Y.

—B. D. Nightingale has resigned as superintendent of Geisendorff's Woolen Mill, Indianapolis, Ind., and taken the selling agency for the firm.

—Mr. George H. Rogers, of Schenectady, N. Y., has accepted a position as overseer of spinning in the Empire State Knitting Mill, Mechanicsville, N. Y.

—Henry Bence succeeds John Gallen, resigned as overseer of carding in the Union Knitting Mill, Hudson, N. Y. Mr. Bence was formerly employed by the Harder Knitting Co., Hudson, N. Y.

MILL NEWS.

Continued from Page 32.

—RHODE ISLAND, Pawtucket. The Royal Weaving Co. are now putting in operation a new department, which is that of velvet weaving. Twenty-four new looms have been added, which were purchased in Germany, and they are now waiting a shipment of cotton, that raised in this country not being a proper quality to use in the manufacture of velvet. This is said to comprise the fourth industry of its kind in the country the others being in New York City, Paterson and Stonington.

—RHODE ISLAND, Woonsocket. A new 250 h. p. engine has been placed in the Ballou Mill, which will furnish sufficient power to run the entire mill. It has heretofore been run partly by water and partly by steam.

—SOUTH CAROLINA, Chester. It is reported that the Catawaba Mills Co. will add 5000 spindles to their plant.

—SOUTH CAROLINA, Graniteville. The Graniteville Mfg. Co. is putting in fifty additional looms into its mill.

—SOUTH CAROLINA, Rock Hill. The ock Hill Cotton Factory Co. is adding 192 looms o their mill.

—TENNESSEE, Memphis. The Bluff City Cotton Mills will add 108 new looms to their plant.

—TEXAS, Cuero. The Excelsior Mfg. Co. are expecting to add 700 spindles and twelve new looms to their plant during the year.

Woolen.

—MAINE, Abbot. Charles Dewes is building an addition to his woolen mill. He will put in new machinery for manufacturing yarn.

—MAINE, Pittsfield. The Waverly Woolen Co. has started up. Their new mill is partially filled with machinery.

—MASSACHUSETTS, West Millbury. The mills of Edwin Hoyle & Son are closed down for three weeks. During this time a napping machine will be put in.

—NEW JERSEY, Somerville. The Somerville Woolen Mills have placed a contract to build an addition 80 feet long to their clothing shop.

—NORTH CAROLINA, Snow Camp. The Dixon Mfg. Co. will add 280 new spindles and 8 new looms to their plant.

—ONTARIO, Perth. R. Gemmel & Son have put in two new mules at their mill and contemplate adding a set of machinery in the near future. They operate two sets of cards and 11 looms on cassimeres and tweeds.

—PENNSYLVANIA, Reynoldsville. Sykes, Allis & Moorhouse will add to their plant one self-acting mule, 450 spindles and two blanket looms, which are now being built by the M. A. Furbush & Son Machine Co.

—RHODE ISLAND, Pascoag. New machinery has been added and other improvements have been made in the mills of W. F. Slade & Co. These are the mills formerly operated by the Inman Mfg. Co.

—RHODE ISLAND, Pascoag. The Sheffield Worsted Mills have added to their mills two new sets of cards which have the Bramwell feeders attached.

—SOUTH CAROLINA, Graniteville. It is reported that the Graniteville Mills will add 60 new looms to their plant.

—VERMONT, Springfield. Wm. H. H. Slack & Bro. are making extensive additions to their shoddy plant. They are building an extension to their main building and are adding new machinery.

Knit.

—ILLINOIS, Rockford. The Burson Knitting Co. will increase their capital stock from $24,000 to $51,000, and they will change the location of their principal office from Chicago to this place.

—NORTH CAROLINA, New Berne. The New Berne Knitting Factory will start work in its new quarters. This company has added new knitting machines which will nearly double the capacity of the plant. They will manufacture finer grades of hosiery than heretofore.

—ONTARIO, Perth. A new engine has been placed in the Tay Knitting Mills and they contemplate putting in another set of cards. The mills started up January 22, after a three weeks' shut down.

Miscellaneous.

—MAINE, Westbrook. The Haskell Silk Co., dress goods and satins, are preparing to put in some new looms.

Mills Starting Up.

Cotton.

—ALABAMA, Florence. The Cherry Cotton Mills are gradually getting into working order. This is a new company which we have reported several times. It is one of the finest mills in the South, equipped with the latest improved machinery throughout.

—ALABAMA, Piedmont. The Coosa Mfg. Co. have started up their mills. They have been shut down for some time repairing their machinery.

—ALABAMA, Talladega. The Talladega Cotton Factory Co. has its new mill completed, and will be started up in the near future.

—CONNECTICUT, New Hartford. The Greenwoods Co. have started up, after a two weeks' shut down.

—MARYLAND, Baldwin. Gambrill & Co., manufacturers of red damask, 100 looms, resumed operations January 29. These mills have been shut down for six months.

—MASSACHUSETTS, Conway. The Tucker & Cook Mfg. Co. has compromised with its creditors and will continue business. The mortgage debts will be paid in full and the unsecured creditors will receive twenty-five cents on the dollar.

—MASSACHUSETTS, Easthampton. The Nashawannuck Mfg. Co. and the Glendale Elastic Fabric Co. started up January 30, running 51 hours per week.

—MASSACHUSETTS, Fitchburg. The Fitchburg Duck Mills started up on full time February 5, with a slight cut in the weaving department.

—MASSACHUSETTS, New Bedford. A number of new looms have been added to the Grinell Mfg. Corp., and work will be resumed.

—MASSACHUSETTS, [New] Bedford. The Pierce Mfg. Corporation started up January 19, the repairing of the engine being about completed.

—MASSACHUSETTS, Taunton. The Cohannet Mills started up January 13. They will run on forty-eight hours a week time.

—PENNSYLVANIA, Scranton. The Scranton Lace Curtain Mfg. Co. resumed operations on January 29. It is said that their New York agent has closed a contract for 30,000 pairs of lace curtains. The Gregory Silk Mfg. Co. has also secured sufficient orders to keep them running for six months.

—PENNSYLVANIA, Wilkesbarre. The Wilkesbarre Lace Mfg. Co., have their spinning mill of 18,000 spindles in full operation, and besides supplying yarns for their lace machines, they will have a surplus for the market. They make a specialty of counts from 26 double to 40 double, all carded yarns.

—VIRGINIA, Lambert's Point. The Powhatan Cotton Mills which have been shut down for several weeks, started up January 16, giving employment to several hundred hands.

Woolen.

—CALIFORNIA, Woodland. We are officially informed that the Woodland Woolen Mills, Henry W. Langenour, proprietor, will start up February 15.

—CONNECTICUT, South Coventry. The Washington Mills Co., 8 set, have partially resumed operations, and it is expected that the entire works will soon be running.

—GEORGIA, Nicojack. The Concord Woolen Mill, which has been idle for over three months, started up February first.

—INDIANA, Seymour. The Seymour Woolen Factory Co. have resumed operations. They manufacture flannels, blankets, jeans and knit goods, and operate 8 set of cards.

—MAINE, Limerick. The woolen mill of Holland Bros., 6 set, dress goods, which has been shut down for three months, started up February 1, on full time.

—MAINE, North Shapleigh. The Hargraves Mill has started up with a reduction of from 15 to 25 per cent. in the wages.

—MASSACHUSETTS, Auburn. It is reported that the mills of the Stoneville Worsted Co. will soon be started up. This is a 7-set plant, running on carpet yarns.

—MASSACHUSETTS, Holyoke. The Germania Woolen Mills have started up temporarily, after a three weeks' shut down.

—MASSACHUSETTS, Monson. The mill of D. W. Ellis & Son will start up on full time February 12, with a 12 1-3 per cent. reduction in wages.

—MASSACHUSETTS, North Bellingham. The Ray Woolen Mill started up on full time February 1. Their mill at Franklin is expected to start up in about a week.

—MASSACHUSETTS, North Andover. Sutton's Mills, 12 set, dress goods and flannels, started up on full time January 29.

—MASSACHUSETTS, Dana. It is reported that the woolen mill of Crawford & Tyler is to be started up. The mill has been shut down for several months on account of the financial depression.

—MASSACHUSETTS, Framingham. The Saxonville Mills, which have been shut down since the first of December, started up January 29.

—MASSACHUSETTS, Lowell. The U. S. Bunting Co. resumed operations January 15, with a 10 per cent. reduction.

—MASSACHUSEUTS, Palmer. The woolen mill of Holden & Fuller is again in operation.

—MASSACHUSETTS, Pittsfield. The Pittsfield Mfg. Co., after a shut down of two weeks, has resumed in part.

—MASSACHUSETTS, Uxbridge. It is reported that the Calumet Mills will soon resume operations. It is understood that they have not orders enough to warrant their running in full, but if the employees will accept a slight cut down they will attempt it.

—MASSACHUSETTS, Uxbridge. The Capron Woolen Co started up January 29, after a shut down since August.

—MASSACHUSETTS, Worcester. The Curtis Mfg. Co., of New Worcester, started up its satinet mill January 30, on full time. The company has a few orders, but will shut down again if no more come in.

—MASSACHUSETTS, Worcester. The Worcester Carpet Co. and the mills of M. J. Whittall have resumed operations.

—NEW HAMPSHIRE, Claremont. The woolen Mills of George L. Balcom started up Jan. 17 on reduced time.

—NEW HAMPSHIRE, Gilsum. The Gilsum Woolen Mfg. Co. start up their mill to make some samples.

—NEW JERSEY, Bordentown. The Springfield Worsted Mills, after an idleness of six months, has resumed in part.

—NEW JERSEY, Bridgeton. The East Lake Woolen Co. started up January 15, after a two months' idleness.

—NEW JERSEY, Camden. Ackroyed & Scull, novelty worsteds, will resume operations January 22.

—NEW JERSEY, Camden. The Fries-Breslin Co., Smyrna rugs, started up February 2, on full time.

—NEW JERSEY, Trenton. The Trenton Worsted Mills, 4 set, worsted yarns, started up February 5, with reduction in wages.

—NEW YORK, Amsterdam. McClary, Wallin & Crouse, successors to Howgate, McClary & Co., rug manufacturers, are starting up their mill. They operate 150 looms.

—NEW YORK, Cornwall. The Firth Carpet Co., started up January 17, with 12 1-2 per cent. reduction in wages. This company manufacture tapestry carpets and employ 200 hands.

—NEW YORK, Jamestown. The Jamestown Worsted Mills, 9 set, dress goods and suitings, have started up, after being idle for several months,

—PENNSYLVANIA, Bristol. The carpet mills of Thomas L. Leedom have started up on part time, and William H. Grundy & Co. are running four days a week.

—PENNSYLVANIA, Conshohocken. The Conshohocken Woolen Mills, which have been idle for several months, have resumed work with 200 operatives.

—PENNSYLVANIA, Germantown. The mills of McCallum & McCallum at Wayne Junction have started up, after being idle for a number of months.

—PENNSYLVANIA, Manayunk. The mills of Carter & Lord, which have been idle for several months, will resume operations.

—PENNSYLVANIA, Norristown. Wm. Watts & Co. and Rambo & Regar started up their mills February 5.

—PENNSYLVANIA, Philadelphia. The blanket mills of John Dobson started up January 15, with a reduction of 15 per cent. in wages. They operate 30 sets of cards and employ 500 hands.

—PENNSYLVANIA, Philadelphia. The Dunlap Carpet Mills, ingrains, 100 looms, it is understood, are making arrangements to start up soon with 100 weavers.

—PENNSYLVANIA, Plymouth. The Roxborough Carpet Mills, after a shut down of five weeks, have started up.

—PENNSYLVANIA, Stroudsburg. The Stroudsburg Woolen Mills, which have been idle for some time, are now ready to start up. The additions are now completed and the company will employ about 200 hands.

—RHODE ISLAND, Mapleville. The Mapleville Mills, 6 set, union cassimeres and cotton warp yarns, have resumed operations.

—RHODE ISLAND, Potter Hill. The Campbell Mills resumed operations Feb. 1, after an idleness of several months.

—VERMONT, Montpelier. The mill of G. F. Sibley, a five-set plant, was started up.

—VERMONT, North Hartland. The Ottaquechee Woolen Mills are to resume operations. They employ 300 hands.

Knit.

—MICHIGAN, Pontiac. The Pontiac Knitting Works, a two-set plant, have resumed operations in full.

—MICHIGAN, Rochester. The Rochester Knitting Mills have started up with a full force and on full time. It is expected that there will be no further suspension.

—NEW HAMPSHIRE, Ashland. The Ashland Knitting Co. is starting up its mill on samples,

—NEW HAMPSHIRE, Lakeport. The hosiery mill of H. H. Wood & Co. has resumed operations, filling sample orders.

—NEW JERSEY, Hammonton. Messrs. Cottrell & Wolfenden have started up their hosiery factory, employing 200 hands.

—NEW JERSEY, New Brunswick. Work will be resumed in the Norfolk & New Brunswick Hosiery Mills, which have been closed down for a month. A reduction will be made in wages.

—NEW YORK, Amsterdam. The No. 3 knitting mill of A. V. Morris & Sons will resume operations. The Green Knitting Co. and McFarland & Co. have also partially resumed.

—NEW YORK, Amsterdam. Operations have been resumed in the knitting mill of C. E. Warner & Co., on full time with a full force.

—NEW YORK, Cohoes. The mills of the National Hosiery Co. will be started up in a short time. They have been leased by Messrs. Gugerty of Cohoes and E. Van Dusen of Troy, N. Y.

—NEW YORK, Cohoes. The Empire Knitting Mills started up February 6, and are now running full time. The mills of the Cohoes Knitting Co. and the Parsons Mfg. Co. are expected to start up soon.

—NEW YORK, Hoosick Falls. The Hoosick Falls Hosiery Co. a three-set mill which has been shut down for several months, will resume operations in their knitting mill with a full force, working on two-thirds time.

—NEW YORK, Hudson. The mills of the Union Knitting Co., 9 set, are about to start up.

—NEW YORK, Kinderhook. The Kinderhook Knitting Co. has resumed operations, after having taken its annual inventory.

—NEW YORK, Little Falls. The Saxony Knitting Co, has resumed operations and will be run on full time.

—NEW YORK, Stillwater. The knitting mill of Newland, Denison & Co. has resumed operations, with a 15 per cent. reduction in wages.

—NEW YORK, Troy. The Commercial Knitting Mills, after being shut down for a month, have resumed in part, and are expected to run on full time in the near future.

—NEW YORK, Waterford. The Kavanaugh Knitting Mill resumed operations January 23.

—PENNSYLVANIA, Du Bois. The Du Bois Knitting Co. has resumed operations in part, after an idleness of several months.

—PENNSYLVANIA, Milton. The West Branch Hosiery Co. resumed operations January 15, with 150 hands.

—PENNSYLVANIA, Scranton. The Lackawanna Mills, after an idleness of several weeks, have partially resumed. They will run in full in a few days.

Miscellaneous.

—CONNECTICUT, Warehouse Point. The Leonard Silk Co. started up their mills February 6, running 55 hours per week.

—NEW JERSEY, Egg Harbor City. The silk ribbon mill of Waggoner & Co., have resumed operations.

—NEW JERSEY, Hackensack. The silk mill of Givernand Bros. has resumed operations after a long idleness.

—NEW YORK, College Point, L. I. The mills of Openhym & Sons resumed operations January 15, after a shut-down of a week on account of a strike among the operatives for higher wages. An increase of from 5 to 15 per cent. in wages was allowed,

—NEW YORK, Wappinger Falls. The Dutchess Bleachery Dyeing & Print Works which have been shut down for several weeks, have resumed operations on full time with no reduction of wages.

—PENNSYLVANIA, Bethlehem. The Bethlehem Silk Mill, after a shut down of six months, has resumed operations.

—PENNSYLVANIA, Honesdale. The silk factory of Dexter Lambert & Co. has resumed operations in full.

—PENNSYLVANIA, Pottsville. The Phœnix Mfg. Co., employing nearly 500 hands, will start up in full as soon as a sufficient number of workers can be secured.

—PENNSYLVANIA, Scranton. The silk mills of Alfred Harvey have started up on double time.

—SOUTH CAROLINA, Charlestown. The Charlestown Bagging Mfg. Co., has nearly completed the repairs to its weaving room, which we reported was destroyed by fire December 9. They expect to begin operations about the first of February.

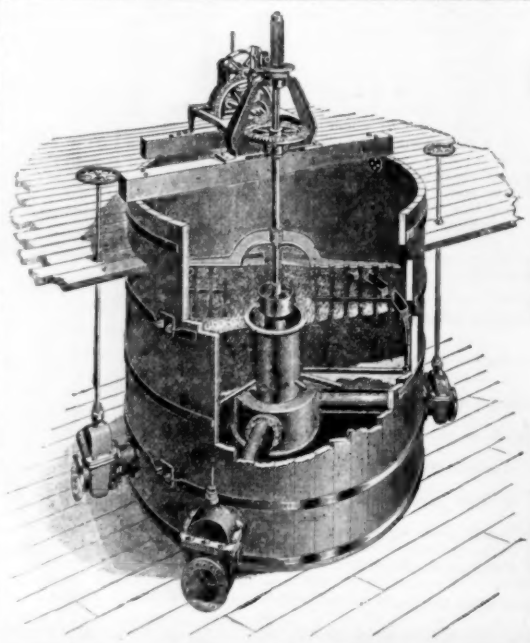
—SOUTH DAKOTA, Sioux Falls. The Sioux Fall Linen Mills have started up with a full force.

Mills Shutting Down.

Cotton.

—CONNECTICUT, Mystic. It is reported that the Greenmanville Mill, 5 set, worsteds, will soon shut down for an indefinite period.

—CONNECTICUT, Stafford Springs. The Central Woolen Co. have closed down their mills owing to lack of orders.



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IN LARGE QUANTITIES.

THE WARREN FILTER

Removes all mud, clay, iron or other impurities held in suspension with less alum than any other process, beside being the only process by which **No Alum Remains in the Filtered Water** to interfere with dyeing or bleaching.

WASH WATER FROM DYE-HOUSES

and wool scouring establishments is now successfully purified by

THE WARREN FILTER.

Capacity, 6000 Gallons of Water per Hour and Upward.

OVER $5,000,000 GALLONS DAILY for water supply and manufacturing purposes purified by our Filter.

THE CUMBERLAND MAN'F'G CO.,

220 Devonshire Street, Boston.

Let us hear from you if you desire

CLEARER COLORS.

—ILLINOIS, Lacon. The Lacon Woolen Mills have shut down throwing seventy-five men out of employment.

—MASSACHUSETTS, Enfield. The mills of Tebo & Handy have been closed down for an indefinite time.

—MASSACHUSETTS, Fall River. The Globe Yarn Mill No. 1 shut down January 17.

—NEW JERSEY, Newark. The cotton department of the Mile End Spool Cotton Co., has shut down indefinitely.

—RHODE ISLAND, Warren. The mills of the Cutler Mfg. Co. have been shut down indefinitely.

—SOUTH CAROLINA, Spartanburg. The Spartan Mills have closed down. A drive wheel went to pieces, causing considerable damage in the engine room. It will probably take two months to make repairs.

Woolen.

—CONNECTICUT, Rockville. The Rock Woolen Mill is closing up the different departments and will soon close the entire mill.

—CONNECTICUT, Winnipauk. The Winnipauk Mills of Lounsbury & Bissell Co. have shut down. The Norwalk Mills Co. have also closed. Both these mills manufacture felt and woolen goods and the shut down was due to the tariff uncertainty.

—CONNECTICUT, Woodbury, The mills of Daniel Curtiss' Sons are shut down owing to the financial depression.

—DELAWARE, New Castle. The Triton Mills, which were recently started up, are again closed down. It is not known when they will start again.

—MAINE, East Douglas. The woolen mill of William E. Hayward & Co. have shut down for an indefinite period.

—MAINE, Old Town. The Old Town Woolen Mill has shut down for three weeks, from lack of orders.

—MASSACHUSETTS, Chelmsford. George C. Moore's mill has shut down for an indefinite period.

—MASSACHUSETTS, Fitchburg, The mills of the Fitchburg Worsted Co. shut down January 30, for an indefinite period, on account of business conditions.

—MASSACHUSETTS, Haverhill. It has been giving out that the Stevens Mills, a 10-set plant, dress goods, will be shut down for an indefinite time as soon as the goods in process of manufacture are finished.

—MASSACHUSETTS, Pittsfield. It is understood that the Pomeroy Woolen Co. will shut down their mills for an indefinite period.

—MASSACHUSETTS, Worcester. The Worcester Woolen Mills Co. have given out that their mills will shut down for an indefinite length of time.

—OREGON, Oregon City. The Oregon City Mfg. Co. closed their mills January 29, for an indefinite period. A ten per cent. reduction in wages was proposed which the operatives would not accept, hence the shutdown.

—RHODE ISLAND, Providence. It is rumored that the Geneva Worsted Mills a 9-set plant, are to shut down.

Knit.

—INDIANA, Elkhart. The Eagle Knitting Mill has shut down.

—MASSACHUSETTS, Farley. The Orange Knitting Co. have closed their mill for two weeks.

—MASSACHUSETTS, Franklin. The Franklin Hosiery Mill shut down January 13, for the purpose of putting in a new boiler and adding improved machinery.

—NEW HAMPSHIRE, Franklin. The hosiery mill of Walter Aiken has been shut down pending appraisal and adjustment of affairs by the heirs.

—NEW YORK, Amsterdam. The Royal Knitting Mills, Snyder, Hull & Smith proprietors, have shut down indefinitely.

Fires.

—ILLINOIS, Chicago. The Chicago Fringe Works have sustained a loss by fire to the amount of $15,000 not covered by insurance.

—MASSACHUSETTS, Dodgeville. The mills of the Hebron Mfg. Co., operated by B. B. & R. Knight, were greatly damaged by fire February 4. The fire originated in the mule room, and the damage done in this room and in the carding and finishing rooms, by fire and by water, is thought to reach about $35,000 covered by insurance. The mill will be shut down until repairs can be made.

—MASSACHUSETTS, Worcester. The building in which the Aetna Knitting Co. is located was destroyed by fire February 1st.

—PENNSYLVANIA, Philadelphia. The mill of Louis D. Erben, manufacturer of chenille curtains, was damaged by fire to the extent of $1000 covered by insurance.

—RHODE ISLAND, Harrisville. The mills of Wm. Tinkham & Co. have been completely destroyed by fire. The entire loss is placed at $450,000, $125,000 on stock and $325,000 on machinery and buildings. The property was insured for $350,000 with $20,000 boilers insurance. They will rebuild at once. They have hired the Plainville Mill at Whippler' and the White Mill at Turkeyville in which to finish up their orders.

[1857—1893.]
Experts, Catalogueers, Appraisers and
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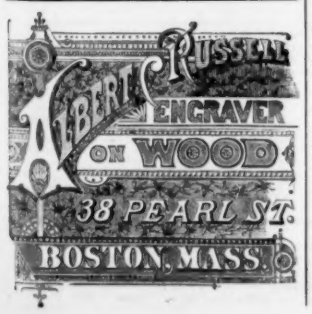

Failures and Suspensions.

—MASSACHUSETTS, Auburn. James Hilton, shoddy manufacturer, by his council, Thayer & Rugg, has filed a voluntary petition in insolvency. His liabilities are $3000; assets $600.

—NEW JERSEY. Midland Park. The silk mill of A. Hengeveld was sold at sheriff's sale to Mr. Murphy of Paterson for $3,265. Mr. Murphy expects to start the mill at East Thirteenth Street.

—NORTH CAROLINA, Raleigh. J. Turner Morehead, owner of the Leaksville Cotton Mills, has made an assignment. His liabilities aggregate $115,000, and it is said that the assets will exceed the liabilities.

—NEW HAMPSHIRE, Laconia. The Laconia Mfg. Co. has liabilities of about $20,000 and is offering 15 per cent. in settlement.

—OHIO, Delphos. Lorenz Werner, proprietor of the Delphos Woolen Mills, has made an assignment. Assets $1500; liabilities $2100.

—PENNSYLVANIA, Germantown. Arthur A. Henson and James B. Henson, knit goods manufacturers, trading as Henson Bros., have made an assignment for the benefit of their creditors to Walter F. Pearce, of Philadelphia.

—PENNSYSVANIA, Philadelphia. James Galbraith, proprietor of the Galbraith & Bros.' carpet mills, has made an assignment. The liabilities are estimated at $85,000. No estimate of the assets can be made. The plant cost over $100,000.

—TENNESSEE, Nashville. The Nashville Cotton Mills have gone into voluntary liquidation, and offer their property for sale. The property consists of two mills with capacity of 20,000 spindles and 480 looms.

—RHODE ISLAND, Newport. An attachment of several thousand dollars on the works of the Newport Elastic Fabric Co. has been placed at the instance of the Easthampton Rubber Co., of Easthampton, Mass.

—TEXAS, Galveston. The mills of the Nottingham Co., lace curtains, has been sold at trustee's sale to James Spillane for $5000.

Facts and Gossip.

—ALABAMA, Rock Mills. We are informed that the Rosedale Mfg. Co., have gone out of business. Their assets are about $30,000 and liabilities about one third of that amount. Inability of the company to dispose of their goods caused this action.

—ALABAMA, Talladega. It is reported that at a meeting of the stockholders of the Talladega Cotton Factory Co., a resolution was adopted authorizing the directors to place a mortgage of $30,000 on the company's property, for the purpose of securing money to put the mill in operation. The buildings and machinery for the factory have been in readiness for some time, but owing to the scarcity of money the subscribers have been unable to meet their obligations hence the necessity of this action.

—CONNECTICUT Danielsonville. The Aspinock Knitting Mills have shut down, the operatives refusing to go to work until their wages have been paid. The company has made an assignment.

—KENTUCKY, Carrollton. The Carrollton Woolen Mills have been sold at public sale, by H. M. Winslow, trustee, for $17,000. It is said that the property was worth nearly $85,000 and that it will be sold again next month.

—LOUISIANA, New Orleans. The Orleans Underwear Co. Ltd. has been organized at this place, with capital of $50,000. This company succeeds B. W. Elder.

—MAINE, Hartland. The improvements at the Linn Woolen Mill have just been completed. The mill is run by the sons of the late Archibald Linn and the firm are preparing to do a good business. This company, as we previously reported, is a re organization of the Sebasticook Woolen Mills.

—MASSACHUSETTS, Chicopee. A petition was presented in the Massachusetts Senate January 18, in behalf of the Dwight Mfg. Co. for authority to increase its capital stock to an amount not exceeding $1,000,000 and to manufacture cotton and woolen goods in any part of the United States.

—MASSACHUSETTS, East Brookfield. It is reported that the Sagendorph Woolen Mill property has been sold to George Greene and Fred Stiner of this place.

—MASSACHUSETTS, Fall River. The Wyoming Mills, which we recently reported had been sold to John W. Hargraves, has been deeded, with water privileges and patent rights, to the Belmont Mfg. Co. The mill will be operated on a coarse grade of twine, and it is understood that the capital stock of the new corporation is about $50,000.

—MASSACHUSETTS, Newton Lower Falls. We are informed that the Dudley Mills, a five-set hosiery and underwear plant, are for sale, and it is thought that a New York stock company will purchase.

—NEW JERSEY, Camden. The Hammonton Knitting Co. has been incorporated to manufacture knit goods. Capital $20,000.

—NEW HAMPSHIRE, Wilton. It is rumored that the Colony Mill property is soon to be sold.

—NEW JERSEY, Paterson. The right, title and interest of the Equitable Silk Mfg. Co. were sold January 22, under attachment proceedings by Alfred Crew, the silk finisher.

—NEW JERSEY, Phillipsburg. The throwing mill of the Standard Silk Co., located at Tobyhanna, has been sold to Frank Frigiero and Albert Renaud, who will take charge on the first of February. The work which was formerly done in this department will now be done in a new addition which has been built to the Phillipsburg mill.

—NEW YORK, Cohoes. The knit goods firm of Fuld & Buchiowitz, of the Riverside Mill has been dissolved, Mr. Buchiowitz purchasing the interest of the Mr. Fuld. It is not known definitely when operations will be resumed.

—NEW YORK, Middletown. It is rumored that Smith Ostrander of Mohawk, John Nelson of Herkimer and E. J. Nelson of this place have entered into partnership, and that the new company will operate the knitting mill recently conducted by E. J. Nelson.

EXPLANATION OF INTEREST TABLES.

These tables are computed on the basis of 360 days to a year, which is that usually adopted by banking institutions. Interest for a fraction of a month is figured by these tables. For instance, if the interest on $1.00 for four months and ten days is required, we find the interest for four months, and finding it to be $.04 we at once perform the sum in mental arithmetic of $.01 for four months, and finding it to be $.04 we at once perform the sum in mental arithmetic of $.01 for four months, and finding it to be $.04 we at once perform the sum in mental arithmetic of $.01 for four as the interest for $.01 for that period. The interest for $.01 for four months we find to be $.04. The interest on $.01 for four months is 4 cents. The interest on $.01 for ten days is $.01/3, $.01 for ten days is $.01/3, $.01 for ten days is such a small sum that it is not taken account of. The process by which we have arrived at this computation can be tabulated as follows:

$.01 for four months	$ .04
" " " "	.04
" " " "	.04
$.01 on ten days	.01/3
" " " "	.01/3
" " " "	.01/3
Total	$ .14

This process is longer in the telling than in the actual performance.

If it is desired to compute interest at other rates than six per cent. the same method would be adopted. For example, to compute interest at seven per cent. a similar process would be followed, the only addition or subtraction required being to add one-sixth of the interest at six per cent. If it were desired to compute interest at eight per cent. we would add one-third to our result; if it was nine per cent. we would add one-half; if at five per cent. we would subtract one-sixth.

TABLES OF INTEREST AT SIX PER CENT.

	DAYS.												MONTHS.										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
$ 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
3	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	0	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
7	0	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2
8	0	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
9	0	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
10	0	0	0	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	3	3
11	0	0	0	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	3	3	3	3
12	0	0	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3
13	0	0	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	3	3	4	4	4
14	0	0	1	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4
15	0	0	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4
16	0	1	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	4	4	4	4	4
17	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	4	5	5	5	5	5
18	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	5	5
19	0	1	1	1	2	2	2	2	2	3	3	3	4	4	4	4	5	5	5	5	5	5	5
20	0	1	1	1	2	2	2	2	2	3	3	3	4	4	4	5	5	5	5	5	5	6	6
21	0	1	1	1	2	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	6	6	6
22	0	1	1	2	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	6	6	7	7
25	0	1	1	2	2	2	3	3	3	4	4	5	5	5	6	7	7	7	7	8	8	8	8
30	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	10	11	11
40	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10	11	11	12	12	13	13	14	14
50	1	2	2	3	4	5	6	7	8	8	9	10	11	12	13	13	14	15	16	16	17	18	18
60	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
70	1	2	3	4	5	6	7	8	9	11	12	13	14	16	17	18	19	21	22	23	24	25	26
80	1	3	4	5	6	7	8	9	11	12	13	14	16	17	18	20	21	22	24	25	26	28	29
90	1	3	4	6	7	8	9	11	12	13	15	16	17	19	20	22	23	24	26	28	29	31	32
100	2	3	5	6	8	9	10	12	13	15	16	18	19	21	23	24	26	28	29	31	33	34	36

TABLES OF INTEREST AT SIX PER CENT.—Continued.

	DAYS.												MONTHS.										
	18	19	20	21	22	23	24	25	26	27	28	29	1	2	3	4	5	6	7	8	9	10	11
$ 1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	3	3	4	4	5	5	6
2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	4	5	6	7	8	9	10	11
3	1	1	1	1	1	1	1	1	1	1	1	1	2	3	5	6	8	9	11	12	14	15	17
4	1	1	1	1	1	2	2	2	2	2	2	2	2	4	6	8	10	12	14	16	18	20	22
5	2	2	2	2	2	2	2	2	2	2	2	2	3	5	8	10	13	15	18	20	23	25	28
6	2	2	2	2	2	2	2	3	3	3	3	3	3	6	9	12	15	18	21	24	27	30	33
7	2	2	2	2	3	3	3	3	3	3	3	3	4	7	11	14	18	21	25	28	32	35	39
8	2	3	3	3	3	3	3	3	3	4	4	4	4	8	12	16	20	24	28	32	36	40	44
9	3	3	3	3	3	3	4	4	4	4	4	4	5	9	14	18	23	27	32	36	41	45	50
10	3	3	3	4	4	4	4	4	4	5	5	5	5	10	15	20	25	30	35	40	45	50	55
11	3	3	4	4	4	4	4	5	5	5	5	5	6	11	17	22	28	33	39	44	50	55	61
12	4	4	4	4	4	5	5	5	5	5	6	6	6	12	18	24	30	36	42	48	54	60	66
13	4	4	4	5	5	5	5	5	6	6	6	6	7	13	20	26	33	39	46	52	59	65	72
14	4	4	5	5	5	5	6	6	6	6	7	7	7	14	21	28	35	42	49	56	63	70	77
15	5	5	5	5	6	6	6	6	7	7	7	7	8	15	23	30	38	45	53	60	68	75	83
16	5	5	5	6	6	6	6	7	7	7	7	8	8	16	24	32	40	48	56	64	72	80	88
17	5	5	6	6	6	7	7	7	7	8	8	8	9	17	26	34	43	51	60	68	77	85	94
18	5	6	6	6	7	7	7	8	8	8	8	9	9	18	27	36	45	54	63	72	81	90	99
19	6	6	6	7	7	7	8	8	8	9	9	9	10	19	29	38	48	57	67	76	86	95	1.05
20	6	6	7	7	7	8	8	8	9	9	9	10	10	20	30	40	50	60	70	80	90	1.00	1.10
21	6	7	7	7	8	8	8	9	9	9	10	10	11	21	32	42	53	63	74	84	95	1.05	1.16
22	7	7	7	8	8	8	9	9	10	10	10	11	11	22	33	44	55	66	77	88	99	1.10	1.21
25	8	8	8	9	9	10	10	10	11	11	11	12	13	25	38	50	63	75	88	1.00	1.13	1.25	1.38
30	9	10	10	11	11	12	12	13	13	11	12	13	15	30	45	60	75	90	1.05	1.20	1.35	1.50	1.65
40	12	13	13	14	15	15	16	17	17	18	19	19	20	40	60	80	1.00	1.20	1.40	1.60	1.80	2.00	2.20
50	15	16	17	18	18	19	20	21	22	23	23	24	25	50	75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75
60	18	19	20	21	22	23	24	25	26	27	28	29	30	60	90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.30
70	21	22	23	25	26	27	28	29	30	32	33	34	35	70	1.05	1.40	1.75	2.10	2.45	2.80	3.15	3.50	3.85
80	24	25	27	28	29	31	32	33	35	36	37	39	40	80	1.20	1.60	2.00	2.40	2.80	3.20	3.60	4.00	4.40
90	27	29	30	32	33	35	36	38	39	41	42	44	45	90	1.35	1.80	2.25	2.70	3.15	3.60	4.05	4.50	4.95
100	30	32	33	35	37	38	40	42	43	45	47	48	50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50

—NEW YORK, New York. Messrs. Hertlein & Schlatter have purchased the ribbon mill of O. Atwood & Sons, for $7,200.

—NEW YORK, Yonkers. The Alexander Smith & Sons Carpet Co. at this place has been reorganized as the Yonkers Carpet Co. Frank T. Holder, formerly of Clinton, Mass., has been elected president of the new corporation.

—PENNSYLVANIA, Chester. The sheriff has received an attachment for $6,463.34 against the South Chester Mfg. Co., woolen and cotton goods, in favor of William H. Starbuck on an assigned claim.

—PENNSYLVANIA, Germantown. The Leicester Mills, operated by Charles Spencer & Co., it is reported, have been sold to parties who will reopen in the spring. These mills manufacture suitings, cloakings, hosiery and knit goods.

—PENNSYLVANIA, Lansdowne. The Industry Down & Quilting Co. have been dissolved and the funds distributed in accordance with the account which has been approved by all the parties in interest.

—PENNSYLVANIA, Philadelphia. The Philadelphia Textile Machinery Co. want to buy a second hand paint mill, with capacity to grind 3 to 4 gallons paint.

—PENNSYLVANIA, Pottstown. It is reported that a textile manufacturing concern from Philadelphia has visited this place with a view to removing their plant here, in order to reduce their expenses that they may be enabled to compete with the South. They have $80,000 worth of machinery and an established trade. They ask that the town where they locate will furnish them a two-story building and a working capital of $25,000 and will be willing to have the same under local management. W. L. Antrim of this place is in correspondence with the parties.

—RHODE ISLAND, Wyoming. The firm of Tyler & McCormack has dissolved partnership. Mr. C. C. Tyler has retired from the firm and it is now owned and controlled by F. C. McCormack.

—TEXAS, Denison. The mills of the Denison Cotton Mfg. Co. are to be sold at commissioner's sale March 6, to satisfy judgments amounting to about $25,000. This company was organized in 1889, and a large four story brick building was erected at a cost of $115,000. Machinery costing $160,000 was purchased, but before the mill was fully equipped the money gave out and the enterprise came to a standstill. The capital stock was fixed at $500,000 of which only $275,000 was paid. This not proving a sufficient amount for operating the mill, it went into the hands of receivers, and the First National Bank of Denison brought suit against the company for $10,000, other creditors following.

—VERMONT, Pownal. The Hoosac Valley Knitting Co. has been changed into a stock company, and will henceforth be called the Wright's Health Underwear Co. Mr. S. Wright will have the controlling interest in the business.

—VIRGINIA, Fredericksburg. A charter has been granted to the Virginia Silk Mills Co. Capital stock $50,000. S. A. Wilder was elected president, Chas. W. Wilder, vice president, George F. Wheeler, secretary and treasurer. These mills have been operated for the last four years by C. A. Wilder & Co.

Jaeger Yarn.

Textile Mfg. World:

Gentlemen. Seeing in your paper several advertisements of "Jaegers" yarn, mixes and bleached, we take the liberty of asking for a little information as to the meaning of the term. What kind of yarn is named "Jaeger"? Any information you can give us on the subject, we shall appreciate.

Yours truly,

COTTON MILLS.

Regarding the name Jaeger, would say that a German physician named Dr. Jaeger advanced the theory that garments made from yarn composed of a mixture of natural black wool and white wool was very healthful, and he got up various garments which went under the name of Dr. Jaegar's sanitary underwear. The proportion of the mixture was about 10 per cent. black and 90 per cent. white wool, and yarns spun from this mixture and color came to be known by the name of Jaegar yarns. It became popular, and as a result the effect was imitated in cotton yarns.

There has been quite an evolution of the Jaegar color up to date in cotton. The mixture varies through a range of color, which goes under the general classification of Jaegar yarns. The bleached yarn is mostly ring spun, and the yarn is bleached white. The mixtures are mule spun yarns. ED.

The Mill Trade in Massachusetts.

That there is very little, if any, improvement in textile business circles in Massachusetts, is the opinion of one of our representatives after making a complete circuit of the State, and visiting a large number of mills. The trip during which the observations were made, extended from January 15 to February 10.

The condition of the textile business in Massachusetts is of course a fair criterion upon which to judge of the condition of things in these lines throughout the northern section of the country. Here is the largest number of spindles, the largest number of sets of cards, and a goodly number of knitting mills, and what is more, all three lines considered, a greater variety of goods is manufactured in Massachusetts than in any other State or section of the country.

To be sure, more mills are running to-day than there have been at any time since last August, the time the least number were running.

But very few of the mills are running full time and full force, and these few are, for the greater part, all cotton goods mills.

Though the cotton mills are running to a considerable extent, few goods are being sold. The mills are simply stocking up. There is no market.

If we were to classify the trade, it might be said that business was poorest in the woolen trade, then followed by the knitting mills and the yarn mills, two lines in which business is about the same condition; in the cotton trade it is best of all, relatively speaking. In reality, the cotton market is very dull and depressed; in fact, in many lines does not exist; there is no market. To divide it into sections and judge by the running time and force, business is best east of Fitchburg, and in the immediate vicinity of North Adams, in Taunton, New Bedford, and above all in the city of Fall River.

From the state of things in Fall River, we may form a fair opinion concerning the cotton trade elsewhere. More mills are running, and a greater percentage of spindles and operatives employed, than is the case in any other section of the country; yet print cloths, at the time of going to press, were being quoted at 2 7-8 cents, stocks on hand were large and steadily piling up.

The King Phillip Mills, operating three mills on fine lawns, sheetings, cambrics, etc., and operating over 115,000 spindles and 2600 looms, had just submitted a proposition to their help to consider either a further reduction in pay or an indefinite shut-down. The market was congested and low, they said. The help were expected to decide in favor of shutting down, and on Feb. 9th one of the company's three mills was entirely shut down, only the weaving in another was running, while the third was also very short handed.

Another mill, however, in the western part of the state, running on similar lines to the King Phillip, fine fancy cottons, was found to be running full force and full time, and to have been running so all summer, although a reduction of seven per cent. was made in the wages, in September. The agent of this mill which was visited, toward the last of January, reported that the goods were "selling well considering the state of the market."

The gingham mills were found to be running in very good shape, although early last year, and for some time past, the market on this line of goods was known to be dull and congested. The newest of all the gingham mills, the splendidly equipped Dunbar, was running full, and the managers were apparently pretty well satisfied with things as they found them.

With the woolen mills, business was found to be particularly dull.

It was worst, probably, among the satinet mills of the Worcester district. Many of the woolen mills are shut down wholly, as they have been for the past two, three and five months. One mill alone in the central part of the state, where the agent seemed to have the upper hand on the market somewhere, was running full time with a full force, and had been all through the past year, except for four weeks during the summer while extensive repairs (positive fact) were being made. This mill is a medium sized plant, and running on cassimeres.

The knitting mills, whatever class of goods they were running on, were found to be very dull. Some of them were entirely shut down or getting out samples as late as the first week in February, work which is ordinarily over by the middle of December. Again, it was found that this work of getting out samples had become more costly this year, as buyers seem to be more exacting than ever before.

The yarn business, including cotton, woolen and worsted yarns, is about the same as the hosiery business, and not quite as poor as the woolen cloth business; there is little demand.

The fine cotton yarn spinners, while not suffering from dull trade any more than the mills making coarser goods, express themselves most anxiously about the future, realizing, as they do, the terrors which the fine yarn clause of the Wilson tariff has in store for them. And well they may be concerned, when one New Bedford mill can to-day import No. 705 combed Egyptian, cheaper by a good margin, than they can buy or manufacture for on this side of the Atlantic.

In spite, however, of this cloud of depression which hangs over the trade, many extensive repairs are being made, new and more modern machinery being set up to take the place of old, and in a few cases absolute enlargements are in progress or are contemplated, showing that "hope still springs eternal," and that when the tide turns, some mills will be in best shape to take advantage of anything the future has in store.

The Necessity of Novelties.

In the vast field of dry goods no portion is of more interest to the merchant or shopper than the one devoted to novelties. These in trade parlance may mean almost anything, but it must be a novelty in either form, application, color or material. The merchant would not wager much on the possibility of making a large sum by the handling of the transitory novelties, yet now and then a royal amount is gleaned from some simple novelty that apparently springs up in a night.

The stated mission of a novelty is to brighten up staple stocks and draw attention to, while not detracting from, other goods and, incidentally, to sell itself. A store where novelties are never to be found does not have a large share of patronage, and without patrons a merchant falls sooner than a house divided against itself. Novelties, from their nature, are bound to be fleeting; but let them vanish, for others are waiting to replace them. Whether it be a piece of silk, a new hairpin, an odd fan, a fetching bit of lace or what not, it soon fills its mission and falls unnoticed, like the famous rose from the bush.

It is a mistake to hide novelties, as they do not improve with age. Show them boldly, change them often and sell them according to their appearance. Some novelties cost 50 cents and look worth $1: they sell accordingly. If they cost 75 cents and resemble an 85-cent article, they should be likewise judged. Never forget that the great use of novelties is to aid in selling other goods that may be useful but not sufficiently ornamental to catch the eyes of shoppers who have ten times the knowledge of values and goods that our oft quoted grandmothers possessed.

In Paris a novelty will appear one day, be the rage in twenty-four hours and die from its own violence in a week. Here it takes longer to become, exist and die, but we are fast following the volatile Parisian in our love of novelties. Novelties make business, unless indulged in too heavily. The happy medium comes with experience. They also serve to stimulate dull periods of the business year and thus may be called the champagne of the dry goods trade. —Dry Goods Economist.

—Messrs. Eben Search & Co., Philadelphia, Pa. have recently made extensive changes in their Fairmount Mill. They have wisely taken advantage of the present times to make their alterations. The entire changes of their power transmission was made by the George V. Cresson Company 18th and Allegheny Ave., Phila., Pa. according to plans designed by them. The mill is now running under this new arrangement entirely satisfactorily.

READY REFERENCE LIST

FOR

Textile Products and Raw Stock.

This index is intended to be of special value for instant reference, as to sources of supply for any desired line of domestic dry goods. It is our intention to have in each line a good representative list of the principal, and also smaller manufacturers, and to increase the list largely, meantime securing the greatest accuracy possible.

For smaller and odd lines it will be made of special value, and new headings added as experience and contact with buyers may suggest.

It is our intent to make this of positive value to both buyer and manufacturer or commission merchant, and all suggestions looking to increasing its usefulness will be carefully considered.

Correspondence solicited with those who desire their addresses to appear.

COTTON GOODS.

Awning Stripes.

Sibley Mfg Co, Augusta, Ga.

Batting.

Massasoit Mfg Co. Fall River, Mass.
Miller Batting & Mfg Co, Columbia, S C.
Riverside Mills, Augusta, Ga.

Bags, Bagging.

Androscoggin Mill, Lewiston, Me.
Charleston Bagging Mfg Co, Charleston, S C.
Galveston Bagging & Cordage Co, Galveston, Tex.
Grahamton Mfg Co, Grahamton, Ky.
Kerr Bag Mfg Co, Concord, N C.
Lane Mills, New Orleans, La.
Odell Mfg Co, Concord, N C.
Sherman Seamless Bag Co, Sherman, Tex.
Stark Mills, Manchester, N H.

Chambrays.

Durham Cotton Mfg Co, E Durham, N C.

Chenille Curtains.

Collins, W C, & Co, 4th and Somerset Sts, Phila
Snape, Albert, & Bro, Gordonsville, Va.

Cheviots.

Conestogo Steam Mills, Lancaster, Pa.
Slatersville Mills, Slatersville, R. I.

Cotton Blankets.

Tremont & Suffolk Mills, Lowell, Mass.

Colored Cotton Goods.

Barnaby Mfg Co, Fall River, Mass.
Farnum, John & Co, 235 Chestnut St, Phil
Lewiston Mill Co, Lewiston, Me.

Corset Nets, Summer.

Wachusett Mills, Worcester, Mass.

Damask.

Chester Mfg Co, Chester, Pa.

Denims.

Amoskeag Mfg Co, Manchester, N H.
Everett Mills, Lawrence, Mass.
Naginis Cotton Mill, New Orleans, La.
Manchester Cotton & Woolen Mills, Manchester Mills, Tex.
Nashville Cotton Mills, Nashville, Tenn.
Pemberton Co, Lawrence, Mass.
Randleman Mfg Co, Randleman, N C.
White Bros, Winchendon Springs, Mass.

Domets, Plain and Fancy.

Eastwood Cotton Mill, Fall River, Mass.
Tremont & Suffolk Mills, Lowell, Mass.

Domets. F. M. D.

Pemberton Co, Lawrence, Mass.

Drills.

Augusta Factory, Augusta, Ga.

Duck.

Ettrick Mfg Co, Ettrick, Va.
Laurel Mills, Laurel, Md.
Lord, R W & Co, Kennebunk, Me.
Mt Vernon Co, Mt Vernon, Md.
Powhattan Mfg Co, of Baltimore City, Powhattan, Md.
Stark Mills, Manchester, N H.
West Point Mfg Co, W Point, Ga.
Woodberry Mills, Woodberry, Md.

Fancy Cotton Goods.

Berkshire Cotton Mfg Co, Adams, Mass.
Borden, Richard, Mfg Co, Fall River, Mass.
Fisher Mfg Co, Grafton, Mass.
Grinnell Mfg Corp, New Bedford, Mass.
King, Philip, Mills, Fall River, Mass.
Lyman Mills, Holyoke, Mass.
Pemberton Co, Lawrence, Mass.
Portsmouth Co, S Berwick, Me.
Potomska Mills, New Bedford, Mass.
Rockdale Mill, Northbridge, Mass.
Wachusett Mills, Worcester, Mass.
York Mfg Co, Saco, Me.

Fancy Embroidery Fabrics.

Wachusett Mills, Worcester, Mass.

Fine Sheeting.

Dallas Mfg Co, Huntsville, Ala.

Fine Shirtings and Dress Fabrics

Aberfoyle Mfg Co. Chester, Pa.
Appleton Co, Lowell, Mass
Dallas Mfg Co, Huntsville, Ala.
Everett Mill, Lawrence, Mass.
Hooksett Mfg Co, Hooksett, N H.
Whittenton Mfg Co, Taunton, Mass.
Williamsville Mfg Co. E Hungry Ct.

Flannels, Cotton.

Elizabeth Poole Mills, Taunton, Mass.
Hamilton Mfg Co, Lowell, Mass.
Tremont & Suffolk Mills, Lowell, Mass.

Flannels, Hathaway.

Methuen Co, Methuen, Mass.

Ginghams.

Amoskeag Mfg Co, Manchester, N H.
Arlington Mills, Wilmington, Del.
Bates Mills, Lewiston, Me.
Cope & Co, Wayne June, Germantown, Phila.
Eagle & Phœnix Mfg Co, Columbus, Ga.
Fort Mill Mfg Co, Fort Mill, S C.
Glasgow Co, S Hadley Falls, Mass.
Greylock Mills, N Adams, Mass.
Highland Park Mfg Co, Charlotte, N C.
Johnson Mfg Co, N Adams, Mass.
Lancaster Mills, Clinton, Mass.
Nashville Cotton Mills, Nashville, Tenn.
Parkhill Mfg Co, Fitchburg, Mass.
Paragon Mfg Co, Columbus, Ga.
Red Bank Mills, Lexington, S C.
Slatersville Mills, Slatersville, R. I.
Westbrook Mfg Co. Westbrook, Me.

Lawns.

Potomska Mills, New Bedford, Mass.
Rockdale Mill, Northbridge, Mass.
Wamsutta Mills, New Bedford, Mass.

Lenos.

Pequot Mills, Montville, Ct.
Wachusett Mills, Worcester, Mass.

Machinery Wipers.

Am Silk Mfg Co, 311 Walnut St, Philadelphia.
Franklin Cotton Mfg. Co., Franklin, Mass.
Massasoit Mfg Co. Fall River, Mass.

Osnaburgs.

Adams Cotton Mill, Montgomery, Ala.
Ashland Mfg Co, Wetheredville, Md.
Eagle & Phœnix Mfg Co, Columbus, Ga.
Lane Mills, New Orleans, La.
Princeton Mfg Co, Athens, Ga.

Outing Cloth.

Tremont & Suffolk Mills, Lowell, Mass.

Plaids.

Athens Mfg Co, Athens, Ga.
Holt, E M, Plaid Mills, Burlington, N C.
Graham, C E, Mfg Co, Asheville, N C.
Manchester Cot & Wln Mills, Manchester Mills, Tex.
McAden Mills, Mc Adensville, N C.
Nashville Cotton Mills, Nashville, Tenn.
Odell Mfg Co, Concord, N C.
Red Bank Mills, Lexington, S C.
Riverside Cotton Mills, Danville, Va.

Prints.

Allen's Print Works, Providence, R. I.
American Print Works, Fall River, Mass.
Cocheco Print Works, Dover, N H.
Dutchess Co, Wappinger's Falls, N Y.
Eddystone Mfg Co, Chester, Pa.
Hamilton Mfg Co, Lowell, Mass.
Merrimack Print Wks, Lowell, Mass.
Pacific Mills, Lawrence, Mass.
Passaic Print Works, Passaic, N J.
Windsor Co, N Adams, Mass.

Quilts.

Allendale Co, Allendale, R I.
Bates Mills, Lewiston, Me.
Clegg Mfg Co, Columbus, Ga.
Lindner, Richard, Paterson, N J.
McPherson, Sam'l 2632 Mascher St, Phila.
Stevens Mfg Co, Fall River, Mass.
Swift Mfg Co, Columbus, Ga.

Sateens.

Berkshire Cotton Mfg Co, Adams, Mass.
Davol Mills, Fall River, Mass.

Sateens.

Gt Falls Mfg Co, Gt Falls N H.
Metacomet Mfg Co, Fall River, Mass.
Pocasset Mfg Co, Fall River, Mass.
Potomska Mills, New Bedford, Mass.
Rockdale Mill, Northbridge, Mass.
Salmon Falls Mfg Co, Salmon Falls N H.
Slade Mills, Fall River, Mass.
Slater, H N, Mills, Webster, Mass.
Wamsutta Mills, New Bedford, Mass.
Warren Mfg Co, Warren, R I.

Scrims.

Pequot Mills, Montville, Ct.
Wachusett Mills, Worcester, Mass.

Sheetings.

Augusta Factory, Augusta, Ga.
Conestogo Steam Mills, Lancaster, Pa.

Shirtings.

Augusta Factory, Augusta, Ga.

Silesias.

Slater, H N Mills, Webster, Mass.

Skirts, Fancy.

Methuen Co, Methuen, Mass.

Table Covers.

Bates Mills, Lewiston, Me.
Globe Damask Co, 2827 Mutter St, Phila.
Phila Tapestry Mills, 2017 Ella St, Phila.

Tickings.

Amoskeag Mfg Co, Manchester, N H.
Conestogo Steam Mills Lancaster, Pa.
Hamilton Mfg Co, Lowell, Mass.
Kincaid Mfg Co, Griffin, Ga.
Nashville Cotton Mills, Nashville, Tenn.
Pemberton Co, Lawrence, Mass.
Thorndike Co, Thorndike, Mass.
Whittenton Mfg Co, Taunton, Mass.

Turkish Toweling.

Chester Mfg Co, Chester, Pa.
Lindner, Richard, Paterson, N J.
Meller, Jas, Paterson, N J.
McAden Mills, McAdensville, N C.
Odell Mfg Co, Concord, N C.

Wide Cotton Goods.

Borden, Richard, Mfg Co, Fall River.
Hargraves Mill, Fall River, Mass.
Laurel Lake Mills, Fall River, Mass.
Union Cotton Mfg Co, Fall River.
Wampanoag Mills, Fall River, Mass.

Wide Sheeting.

Dallas Mfg. Co. Huntsville, Ala.

WOOLEN GOODS.

Beavers.

Ashuelot Union Mills, Ashuelot, N H.
Bound Brook Woolen Mills, Bound Brook, N J.
Collins, M, Woolen Mills, Collinsville, Mass.
Germania Mills, Holyoke, Mass.
Worumbo Mills, Lisbon Falls, Me.

Blankets.

Cordaville Woolen Co, Cordaville, Mass.
Davenport Woolen Mills, Davenport, Ia.
Edensburgh Woolen Mill, Edensburgh, Pa.
Emlenton Woolen Mills, Emlenton, Pa.
Marysville Woolen Mill, Marysville, Cal.
Napa Woolen Mill, Napa, Cal.
New Albany Woolen & Cotton Mills, New Albany, Ind.
Northern Ohio Blanket Mills, Cleveland, O.
North Star Woolen Mill, Minneapolis, Minn.
Rock Falls Woolen Co, Middletown, Ct.
Winthrop Mills Co, Winthrop, Me.

Carriage Linings.

Dustin Island Woolen Mill, Penacook, N. H.

Cashmerettes.

Haile & Frost Mfg Co, Hinsdale, N H.
Hinsdale Woolen Mill, Hinsdale, N H.

Cassimeres.

Beaver Dam Woolen Mill, Beaver Dam, Wis.
Blackinton, S, Wm Co, Blackinton, Mass.
Callaghan & Bro, 60th St and Balt Av, W Phila.
Chase, Jno & Sons, Webster, Mass
Devonshire Mills, Goff's Falls, N H.
Dundee Woolen Co. Passaic, N J.
Globe Woolen Co, Utica, N Y.
Indian Spring Woolen Co, Madison, Me.
Madison Woolen Mills, Madison, Me.
Old Kentucky Woolen Mills Co, Louisville, Ky.
Rock Mfg. Co, Rockville, Ct.
Sawyer Woolen Mills, Dover, N. H.

Cheviots.

Henry, H S, 64th and South Sts, Phila.
Sawyer Woolen Mills, Dover, N. H.
Slater Woolen Co, Webster, Mass.
Talbot Mills, N. Billerica, Mass.

Chinchillas.

Bound Brook Mills, Bound Brook, N J.
Raritan Woolen Mills, Raritan, N J.

Cloakings.

Doak, Jas Jr & Co, Trenton Av and Norris St, Phila.
Southwark Mills Co, Phila.

Dress Goods.

Assabet Mfg Co Maynard, Mass.
Atlantic Mills, Providence, R I.
Brickner Woolen Mills, Sheboygan Falls, Wis
Brown & Ackroyd, Lawrence, Mass.
Camden Woolen Co, Camden, Me.
Clinton Mills Co, Norwich, Ct.
Cowan Woolen Co, Lewiston, Me.
Ellis, D W C, & Co, 246 Chestnut St, Phila.
Farnsworth Co, Lisbon Centre, Me.
Folwell Bros & Co, 625 Chestnut St, Phila.
Gilbert, Geo H, Mfg Co, Gilbertville, Mass
Goodall Worsted Co, Sanford, Me.
Indian Spring Woolen Co, Madison, Me.
Louisville Woolen Mills, Madison, Ky.
Madison Woolen Co, Madison, Me.
Marland Mills, Andover, Mass.
Nonantum Worsted Co, Newton, Mass.
N Andover Mills, N Andover, Mass.
Overbrook Mills, Camden, N J.
Pacific Mills, Lawrence, Mass.
Rosenberger, A, & Co, 500 Columbia Av, Phila
Sagehommie & Byers, No Andover, Mass.
Southwark Mills Co, Phila.
Sutton Mills, N Andover, Mass.
Talbot Mills, No Billerica, Mass.
Washington Mills, Lawrence, Mass.
W Buxton Mill, W Buxton, Me.

Felts.

City Mills Co, City Mills, Mass.
Dolge, Alfred & Son, 110 East 14th St, New York.
Piqua Win Mills (for paper mks), Piqua, O.
Union Mfg Co, Norwalk, Ct.

Flannels.

Allen, L L & Bros, Rochester N Y, and 99 Franklin St, N Y.
Amana Woolen Mills, Amana Township, Ia.
Ballardvale Mills, Ballardvale, Mass.
Brown Mfg Co, Dover, Me.
Capital City Woolen Mill, Des Moines, Ia
Cheshire Mills, Harrisville, N H.
Concord Mfg Co, W Concord, N H.
Columbia Mills, Lewiston, Me.
Gonic Mfg Co, Gonic, N H.
Gray, The F Co, extra heavy, Piqua, O.
Groveland Mills, S Groveland, Mass.
Hayward, H T, Franklin, Mass.
Jacksonville Woolen Mills, Jacksonville, Ill.
Jamestown Woolen Mills, Jamestowh, N J.
Kay, Thos, Woolen Mill Co, Salem, Ore.
Kent, Thomas, Mfg Co, Clifton Heights, Pa.
Knoxville Woolen Mill, Knoxville, Ia.
Louisville Woolen Mills, Madison, Ind.
Middlesex Co, Lowell, Mass.
Mascoma Flannel Co, Lebanon, N. H.
Olney, Geo W, Cherry Valley, Mass.
Slater Woolen Co, Webster, Mass.
Stirling Mills, Lowell, Mass.
Talbot Mills, N Billerica, Mass.

Horse Blankets, Etc.

Monadnock Blanket Co, Marlboro, N H.
Ray Fabric Mills, Franklin, Mass.
Riley, Wm S, & Co, 507 Arch St, Phila, Pa.
Rockfall Woolen Co, Middletown, Conn.
Troy Blanket Mills, Troy, N H.

Jeans Pants.

Henderson Woolen Mills, Henderson Ky, "Celebrated Bull Breeches."
Owensboro Woolen Mill Co, Owensboro, Ky.

Kerseys.

Ashland Mfg Co, Wetheredville, Md.
Dobson, Jno & Jas Co, 28 N Front St, Phila
New Albany Woolen & Cotton Mills, New Albany, Ind.
Worumbo Mills, Lisbon Falls, Me.

Meltons.

Globe Mills, Utica, N Y.
Germania Mills, Holyoke, Mass.
Ottaqueechee Woolen Co, N Hartland, Vt.
Pomeroy, Theo L, Pittsfield, Mass.

Military Goods.

Sawyer Woolen Mills, Dover, N H.
Charlottesville Wln Mill, Charlottesville, Va.

Overcoatings.

Bound Brook Wln Mills, Bound Brook, N J.
Dobson, John & Jas Co, 28 N Front St, Phila.
Georges River Mills, Warren, Me.
Germania Mills, Holyoke, Mass.
Philips & Kunhardt, Lawrence, Mass.
Washington Mills, Lawrence, Mass.
Worumbo Mills, Lisbon Falls, Me.

Repellants.

Cumberland Mills, Lewiston, Me.
Hudson River Woolen Mills, Newburgh, N Y.
Robinson Mfg Co, Oxford, Me.
Winthrop Mills Co, Winthrop, Me.

Satinets.

Abbot Woolen Mills, Abbot P O, Me.
Aldrich, C T, Milbury, Mass.
Bigelow & Darling, Worcester, Mass.
Caryville Mills, Caryville, Mass.
Darling, Newton, Cherry Valley, Mass.
Kauffman, W H, Athol, Mass.
Quinapoxet Woolen Mills, Quinapoxet, Mass.
Tebo, D E, Athol, Mass.
Thayer, E D, Jr, Worcester, Mass.
Wood, D F, Northboro, Mass.

Worsted Suitings and Trouserings.

Chase, Jno & Sons, Webster, Mass.
Fulton Worsted Mills, Oswego, N Y.
Hockanum Co, Rockville, Ct.
Lymansville Co, of 61 Leonard St, N Y.
National Worsted Mills, Providence, R I.
Perseverance Worsted Co, Woonsocket, R I. C B Filliebrown & Co, Selling Agts, Boston and New York.

Worsted Suitings and Trouserings.

Riverside Mills, Providence, R I.
Rock Mfg Co, Rockville, Ct.
Sawyer Woolen Mills, Dover, N H.
Simson & Kirkaldy, Woonsocket, R I.
Singleton Worsted Co, Franklin, Mass.
Springville Mfg Co, Rockville, Ct.
Tremont Worsted Mills, Woonsocket, R I.
Washington Mills, Lawrence, Mass.

Union Cass.

Taft, McKean & Co, Carryville, Mass.
Douglass Woolen Co, E Douglass, Mass.
Jefferson Mfg Co, Jefferson, Mass.
Northboro Mills, Northboro, Mass.
Logansport Woolen Mill, Logansport, Ind.
Manchester Woolen Mills, Manchester, Ia.
Hoosier Woolen Co, Indianapolis, Ind.

KNIT GOODS.

Athletic and Sporting Goods.

Roper, R G & Co, Highlandville, Mass.

Cardigan Jackets.

Baron, S & Co, 99 Franklin St, New York City.
Greaves, Thos, Germantown, Pa.
Hellmer, M, 243 Poplar St, Myk, Phil.
Mottram, Thos, Germantown, Pa.
Peaberdy, Geo, Penn St, Germantown, Pa.
Springthorpe, Isaac, Germantown, Pa.
Townsend, Edward, 2421 Waterloo St, Phil.
Woodcock Bros, Germantown, Pa.
Yates, Wm, 1640 N Second St, Phil.

Children's Seamless Ribbed Waists.

Nazareth Mfg Co, Nazareth, Pa.

Combination Suits.

Holmes Co, 109 Kingston St, Boston, Mass.

Eider Down.

French & Ward, Stoughton, Mass.

Fancy Knit Flannels.

French & Ward, Stoughton, Mass.

Fancy Knit Goods.

Bohne Knitting Works, Jacksonville, Ill.
Barrows, David & Co, Nicetown, Phil.
Reed, Mrs S, Richmond, Mich.
Why Bros & Co, Germantown, Pa.

Hosiery.

Alden Knitting Mills, 138 Julie St, N O, La.
Branson, Geo & Co, Ann & Jefferson Sts, Phil.
Chambersburg Ho Co, Chambersburg, Pa
Contoocook Mills Co, Hillsboro Bridge, N H
Crescent City Yarn & Knitting Mill, N O, La.
Ellis, G W, 149 Race St, Phila, Pa.
Enterprise Hosiery Co, Royersford, Pa.
Frankford Hosiery Mills Co, Frankford, Phil.
Glimartin Mills, Belmont, N H.
Hunsicker, I C & Co, Reading, Pa.
Keystone Hosiery Co, Norristown, Pa.
Kokomo Knitting Co, Kokomo, Ind.
Lowell Hosiery Co, Lowell, Mass.
Macon Knitting Co, Macon, Ga.
Mankato Knitting Co, Mankato, Minn.
Norristown Hosiery Co, Norristown, Pa.
Olzendam, A P, Hosiery Co, Manchester, N H.
Osborne, Owen, 4th and Somersett Sts, Phila.
Peoria Hosiery Mills, Peoria, Ill.
Pierce Thos A & Co, 1720 N 5th St, Phila.
Pitman Mfg Co, Laconia, N H.
Pontiac Knitting Works, Pontiac, Mich.
Powell & Bro, 2800 Parish St, Phila, Pa
Renfrew Mfg Co, Adams and Coral Sts, Philadelphia, Pa.
Sasman, C & G, 726 Girard Ave, Phila, Pa.
Sullivan, Wm & Co, 200 Somersett St, Phila.
Sulloway Mills, Franklin, N H.
Taylor & Hawthorn, 19th St and Fishers' Lane, Germantown, Pa.
Taylor, A, 5120 Pine St, W Phila, Pa.
Webber Louis & Co, Of 99 Franklin St, N Y.
Windsor Knitting Mills, Hagerstown, Md.
Wust, Chas H, & Co, 228 Walnut St, Cincinati, O

Knit Wrists for Glove Mfrs,

W D Gregory, 17 Kingsboro Ave, Gloversville, N Y.

Gloves, Mitts and Mittens.

Amsterdam Silk Mills, Amsterdam, N Y.
Armstrong, Wm, Highlandville, Mass.
Berkson, J & Co, 278 E Madison St, Chicago.
Bonsor, Wm, Germantown, Pa.
Conyers, Button & Co, Germantown, Pa.
Dazell, M, Germantown, Pa.
Gloversville Hair Co. Ltd. Gloversville, N Y. (Also fulled mittens.)
Hall, L C Jr, & Co, silk & wstd, 6th & Arch, Phila, Pa.
Keefer, J N, Camillus, N Y.
Kokomo Knitting Co, Kokomo, Ind.
Lyons, Jas, Highlandville, Mass.
Michigan Knitting Co, Lansing, Mich.
Royal Knitting Co, Johnstown, N Y.
Western Knitting Mills, Detroit, Mich.

Mittens, Ladies' and Children's.

White, Isaac, Highlandville, Mass.

Overshirts.

Groat, Edwin, Hudson, N Y.
Liddle Jno & W A, Amsterdam, N Y.

Ribbed Hosiery.

Chicago, Rockford Hosiery Co, Kenosha, Wis, Rockford, Ill.
Nazareth Mfg Co, Nazareth, Pa.

Scotch Caps.

Bayliss, Alfred, Utica, N Y.
Lynch Scotch Cap Co, Utica, N Y.
Mang G, Winona, Minn.
Northrop, D W, Utica, N Y.

Silk Hosiery.

Belding Bros, Northampton, Mass.
Burpee, A E, Lakeport, N H.
Dalby, Thos, Watertown, Mass.
Friedman, H & Co, 29 Bank St, Cleveland, O.
Griswold, D C & Co, 67 Chauncy, Boston.
Mellicott, Morgan & Co, Springfield, Mass.
Nonotuck Silk Co, Florence, Mass.

Silk Mittens.

Wye Bros, Needham, Mass.

Surgical Elastic Goods.

Gorse, Wm, Highlandville, Mass.

Sweaters.

Hub Mfg & Knitting Co, 119 Summer St, Boston.
Froome, Wm E, Highlandville, Mass.

Underwear.

Anchor Hosiery Mills, Cohoes, N Y.
Atlantic Knitting Co, Cohoes, N Y.
Astoronga Knitting Mills, Little Falls, N Y.
Anchor Hosiery Co, office 74 Franklin St, N Y
Bennington Knitting Mills, Bennington, Vt.
Bradford, H E & Co, Bennington, Vt.
Bailey, Herbert, Claremont, N H.
Clark & Holsapple Mfg Co, Cohoes, N Y.
Commercial Knitting Mills, Troy, N Y.
Contoocook Mills Co, Hillsboro Bridge, N H.
Conyers, Button & Co, Germantown, Pa.
Crane & Waters Co, Milbury, Mass.
Crossingham, Patton, Germantown, Pa.
Cooper Mfg Co, Bennington, Vt.
Gardiner & Warring, Amsterdam, N Y.
Greene Knitting Co, Amsterdam, N Y.
Hoosac Valley Knitting Mill, Pownal, Vt.
Jaros Hygienic Underwear Co, 831 Broadway, New York.
Jones, Lewis Bristol, Pa.
Lewis Knitting Co, Janesville, Wis.
Lawrence Mfg Co, Lowell, Mass.
Miami Valley Knig Mills, I & c, Hamilton, O.
Muehling & Johnson, E Stroudsburg, Pa.
McDowell, G H & Co, Cohoes, N Y.
McCowatt, W R & Co, Amsterdam, N Y.
Mosely & Co, Highlandville, Mass.
Piqua Hosiery Co, ladies & children, Piqua, O
Pratt, S B & Co (Infants'), Everett, Mass.
Pilling & Madley, Trenton Ave and Huntingdon St, Phil.
Queen Knitting Co, 204 E 43rd St, office 256 Church St, N Y City.
Rockwood, Geo & Co, Bennington, Vt.
Springfield Knt Co (Infants') Springfld, Mass.
Stretton, Chas & Son, Stoughton, Mass.
Staley, A C, Mfg Co, South Bend, Ind.
Taylor, Bramley & Co, Chicopee Falls, Mass.
Tiffany Bros, Bennington, Vt.
Valentine Knitting Co, Bennington, Vt.
Victor Knitting Mills, Little Falls, N Y.
Waterford Knitting Co, Waterford, N Y.
Way Mfg Co, 2008 N Second St, Phil.
Warner, DeForest & Co, Amsterdam, N Y; office, 253 Church St, N Y City.

Underwear, Men's.

Titus Shead Co, Little Falls, N Y.

Underwear, Men's and Women's Medium and Light Weight.

Harder Knitting Co, Hudson, N Y. Our specialty is 12 lbs. white Merino highest grade. Goods sold to Jobbers only. No agents. Address all inquiries direct to mill.

SILK GOODS.

Broad Silks.

Bentley, Thomas W & Co, Paterson, N J.
Cheney Bros, S Manchester, Ct.
Dexter, Lambert & Co, Paterson, N J.
Dorothy & Wadsworth Paterson, N J.
Fairhurst & Co, Dale Ave, Paterson, N J.
Gallant Bros, 49 Godwin St, Paterson, N J.
Green, M J, 58 Railroad Ave, Paterson, N J.
Hess, Goldsmith & Co, office, 89 Grand St, N Y.
Haskell Silk Co, Westbrook, Me.
Hamil & Booth, Paterson, N J; Of 68 Grand St, N Y.
Natchaug Silk Co, Willimantic, Ct.
Pelgram & Meyer, office, 49 Greene St, N Y.
Rhemania Mills, office, 45 Greene St, N Y.
Strange, The Wm Co, Paterson, N J.
Simon, R & H, Union Hill, N J; Of, 57 Greene St, N Y.
Smith, George W Silk Co, Lakeview, N J.
Summit Silk Mfg Co, Summit, N J.

Braids, Trimmings, Etc.

Cheney Bros, S Manchester, Ct.
Friedburger S, 1227 Callowhill St, Phil, Pa.
Natchaug Silk Co, Willimantic, Ct
Sutro Bros Braid Co, 127 Spring St, New York.

Knitting and Thread Yarns.

Champlain Silk Mills, Whitehall, N Y.

Organzines and Trams.

Cheney Bros, S Manchester Ct.
Saquoit Silk Mfg Co, 76 Chauncy St, Boston

Ribbons.

Beckett, David, Paterson, N J.
Cheney Bros, S Manchester, Ct.
Doherty & Wadsworth, Paterson, N J.
Dodds, John, Paterson, N J.
Dexter, Lambert & Co, Paterson, N J; Of, 35 Greene St, N Y.
Helvetia Silk Mills, Paterson, N J.
Horn, Chas, office, 471 Broome St, N Y.
Loth, Joseph & Co, 65 Greene St, N Y.
Oliphant & Toner, Addy Mill, Paterson, N J.
Pelgram & Meyer, office, 49 Greene St, N Y.
Rhenania Mills, office, 45 Greene St, N Y.
Strange, The Wm Co, Paterson, N J.
Weddelgen, Louis & Co, 474 Broom St, N Y

Satins.

Cheney Bros, S Manchester, Ct.
Haskell Silk Co, Westbrook, Me.

Upholstery Goods.

Horstmann, Wm H & Sons, 500 Cherry St, Phila, Pa.
Hoyle, Harrison & Kaye, Lehigh Av, Phila.
Hunter, W, Jr & CO, Mascher, York St, Phila.
Lyons Silk & Tape Co, Paterson, N J.
Nepaul Silk Tap Mills, 400 Cambria St, Phila.
Townsend, Harrison, Norristown, Pa.

Upholstery Trimmings.

Maguire, Wm J, 39-41 No. 2d St, Camden, N J.

Sewings and Twists.

Adams, D E, 435 Broadway, N. Y.
Athol Silk Co, Athol, Mass.
Brown, L D & Son, Middletown, Ct.
Champlain Silk Mills, Whitehall, N Y.
Conant, H E, Contoocook, N H.
Griswold Worsted Co, 322 Chestnut St, Phila.
Leonard, Jon N, Silk Co, Northampton, Mass.
Natchaug Silk Co, Willimantic, Ct.
Nonotuck Silk Co, 72 Green St, New York.
Sequoit Silk Mfg Co, 76 Chauncy St, Boston.
Walmsley, Philip, 34 Green St, N Y.

Silk Throwsters.

Bethlehem Silk Co, Bethlehem, Pa.
Cooper, Richard, Market St, Paterson, N J.
MacKay & Rowson, Barnert Mill, Paterson.
Neuburger Silk Co, office, 96 Greene St, N Y.
Post Throwing Co, Granite Mill, Paterson
Ramsay & Gore Mfg Co, Paterson, N J.
Rockwell, R & Son, Matteawan, N Y.
Ryle, John C & Co, Stroudsburg, Pa.
Ryle Wm, & Co, 54 Howard St, N Y.
Scaton & Baines, Allentown, Pa.
Strauss, F A, 98 Greene St, N Y.
Taylor, James, 116 River St, Paterson, N J.
Turner, A G, Willimantic, Ct.

Winding and Warping.

Davenport, Herbert, Box 80 Paterson, N J.

MISCELLANEOUS.

Burlaps.

Logie, Alex, & Co, 56 Worth St, N Y.
Rogers, Gorham, & Co, 20 Federal St, Boston.

Carpet Linings.

Bishop, Robt, S Boston, Mass.

Clothes Lines.

Boscowan Mills, Penacook, N H.

Crash, Linen.

Stevens Linen Wks, Webster, Mass.

Fish Lines.

tates, Israel, Canonchet, R I.
Lawrence Line Co, Lawrence, Mass.
Meyer, John C & Co, 299 Devonshire St Boston
Pawtucket Braided Line Co, Pawtucket, R I.

Felt Shoes and Slippers.

Dolge, Alfred.
Matteawan Felting Co, Easton, Pa.

Boston Finishing Works

WILLIAMSTOWN, MASS.

BLEACHERS, DYERS AND FINISHERS

Of Pure Finish Shirtings, Sheetings, Canton Flannels and Filled Goods. Also Silesias, Satteens, Corset Jeans, Cambrics, Sleeve Linings, Pocketings, Flanneletts, and all descriptions of Dyed Goods.

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Being equipped with the French and other Foreign and Domestic Napping Machines, we are prepared to give any kind of Nap required, including the French Flannel Finish.

Fire Hose.

Boston Woven Hose & Rubber Co, Cambridgeport, Mass.
Eureka Fire Hose Co, Henry and Cranberry Sts, Brooklyn, N Y.
Fabric Fire Hose Co, Warwick, N Y.

Hair Cloth.

Pawtucket Hair Cloth Co, Pawtucket, R I.

Lacings for Knit Goods.

Hepner & Horwitz, 84 Leonard St, N Y.

Narrow Fabrics.

Krout & Fite, 2632-40 Mascher St, Phila.

Pearl Buttons.

Bloomenthal, B & Co. 386 Broadway, NY.
Crouse Hy W, 347 Broadway, N Y.
Webb, Jos, Nassau Works, Newark, N J.
Whatten, Newey & Whatton, Nassau Works, Newark, N J.

Tapes and Braids.

Chadburn & Moore, Springfield, Mass, and 120 Bedford St., Boston.
Fleming & Chapin, 215 Church St, Phila.
Witter, H M, & Co, Worcester, Mass.

Webbing.

Bridgeport Elastic Web Co, Bridgeport, Ct.
Excelsior Web and Tape Co, Hop River, Ct.
Witter, H M. & Co. Worcester, Mass.

Wicking (Ball).

Massasoit Mfg Co, Fall River, Mass.

YARNS, THREADS, ETC.

Banding.

Boscowen Mills, Penacook, N H.
Heywood, M, & Co, Fall River, Mass.
Moore, C, 12 S 5th St, Phila.
Small Bros, Fall River, Mass.
Whittier Cotton Mills, Lowell, Mass.

Carpet Yarns.

Globe Cotton Mills, Augusta, Ga.
Nashville Cotton Mills, Nashville, Tenn.

Colored Cotton Yarns.

Sanford Spinning Co, Fall River.

Cotton Warps.

Bennett & Van Valkenburg, Athol, Mass.
Blythe, R A, 114 Chestnut St, Phila.
Buckingham & Paulson, 83 Leonard St, N Y.
Chadwick, Jas, & Bro, Ltd, 503 Broome St, N Y
Fleming & Chapin, 215 Church St., Phila. Pa.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg Co, Pawtucket, R I.
Harrison Yarn & Dyeing Co, Pawtucket, R I.
Holmes, J C, Co. Springfield, Vt.
Howland Mills Corp, New Bedford, Mass.
Rhodes, John, Warp Co, Milbury, Mass.
Thompson, Sidney, 66 Grand St, N Y.
Whittier Cotton Mills, Lowell, Mass.

Embroidery Yarns.

Champlain Silk Mills, Whitehall, N Y.

Fine Cotton Yarns.

Bluff City Cotton Mills, Memphis, Tenn.
Buckingham & Paulson, 83 Leonard St, N Y.
Chadwick, Jas & Bro, Ltd, 503 Broome St, N Y
Globe Yarn Mills, Fall River, Mass.
Greene & Daniels Mfg Co, Pawtucket, R I.
Hadley Co, 95 Milk St, Boston.
Howland Mills Corp, New Bedford, Mass.
Kerr Thread Co, Fall River, and 29 Mercer St, N Y.
Littlefield Mfg Co. Pawtucket, R I.
Louisville Cotton Mills Co. Louisville Ky
New Bedford Mfg Co, New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Strauss, F A, 93 Greene St, N Y.
Thompson, Sidney, 66 Grand St, N Y.

Fire Hose Cord.

Boscowen Mills, Penacook, N H.
Whittier Cotton Mills, Lowell, Mass.

Glazed Yarns.

Blodgett & Orswell, Pawtucket, R. I.
Chadwick, Jas & Bro, Ltd, 503 Broome St, NY.
Kerr Thread Co, Fall River and 29 Mercer St, N Y.
Warren, W, Thread Wks, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twines.

Chadwick, Jas & Co, Ltd, 503 Broome St, N Y.
Hadley Co, 95 Milk St, Boston.
Kerr Thread Co Fall River, and 29 Mercer St, N Y.
Moore, C, 12 S 5th St, Phila.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Boscowen Mills, Penacook, N H.
Chadwick, Jas & Bro, 503 Broome St, N Y.
Cutler Mfg Co, Warren, R I.
Globe Yarn Mills, Fall River, Mass.
Goodwill & Ashworth, Jamestown, N Y.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg Co, Pawtucket, R I.
Jencks, E, Mfg Co, Pawtucket, R I.
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Littlefield Mfg. Co. Pawtucket, R I.
Mason, Wm, Mfg Co, Providence, R I.
Nemasket Mills, Taunton, Mass.
Regan, Jas J, Rockville, Ct.
Orswell Mills, Fitchburg, Mass.
Rotch Spinning Corp, New Bedford, Mass.
Sanford Spinning Co, Fall River.
Winterbottom, Hyde & Co, 223 Chestnut St, Phila.
Warren, W, Thread Wks, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Jute Yarns.

Logie, Alex & Co, 56 Worth St, N Y.
Lane, J H, & Co, 110 Worth St, N Y.

Lisle Threads.

Chadwick, Jas & Co, Ltd, 503 Broome St, N Y.
Warren, W, Thread Wks, Westfield, Mass.

Novelty Yarns.

Sanford Spinning Co, Fall River, Mass.

Tinsels, Silk Noil and Fancy Yarns.

Cranston Worsted Mills, Bristol, R I.
Strauss, F A, 93 Greene St, N Y.
Thompson, Sydney, 66 Grand St, N Y.

Silk Yarns.

Champlain Silk Mills, Whitehall, N Y.
Cheney Bros, Manchester, Ct.
Griswold Wstd Co, Ld, 322 Chestnut St, Phila.
Macfarlane & Co, 81 Grand St, N Y.
Walmsley, Philip, 54 Green St, N Y.
Wm Ryle & Co, 54 Howard St, N Y.
Saquoit Silk Mfg Co, 76 Chauncy St, Boston.
Taff, Alfred, 69 Mercer St, N Y.
Thompson, Sydney, 66 Grand St, N Y.

Threads.

Chadwick, Jas, & Bro, 503 Broome St, N Y.
Greene & Daniels Mfg Co, Pawtucket, R I.
Hadley Co, 95 Milk St, Boston.
Kerr Thread Co, Fall River, and 29 Mercer St, N Y.
Moore, C, & Co, 12 S 5th St, Phila.
Stafford Mfg Co, Pawtucket, R I.
Warren, W, Thread Wks, Westfield, Mass.

Tussah and Chappe,

Strauss, F A, 93 Greene St, N Y.
Thompson, Sydney, 66 Grand St, N Y.

Twines.

Allen, J & S, Walpole, Mass.
Boscowen Mills, Penacook, N H.
Lord, R W & Co, Kennebunk, Me.
Ware, Bruce R & Co, 200A Devonshire St, Boston, Mass.

Worsted Yarns.

Abegg & Rusch, 90 & 94 Grand St, N Y.
Allegheny Worsted Mills, Allegheny and Trenton Aves, Phila, Pa.
Goodwill, & Ashworth, Jamestown, N Y.
Ball, Thomas H, 236 Chestnut St, Phila, Pa.
Continental Worsted Mills, 2100 Washington Ave, Phila.
Cranston Worsted Mills, Bristol, R I.
Johnston & Farie, 132 South 3d St, Phila.
Griswold Worsted Co, 322 Chestnut St, Phila.
Landenburgh Wstd Mills, Landenburgh, Pa.
Providence Worsted Mills, Providence, R I.
Strauss, F A, 93 Greene St, N Y.
Valley Worsted Mills, Providence, R I.
Washington Mills Co, Lawrence, Mass.
Woonsocket Worsted Mills, Woonsocket, R I.

Woolen and Merino Yarns.

Brown, Wilson H, & Bro, Germantown, Pa.
Johnston & Farie, 132 South 3d St, Phila.
Guerin Spinning Co, Woonsocket, R I.
Sparta Woolen Mill, Sparta, Ill.

Yarn Dealers.

Abegg & Rusch, 90-94 Grand St, N Y.
Buckingham & Paulson, 83 Leonard St, N Y; 120 Chestnut St, Phila; 211 Jackson St, Chi.
Blythe, R A, 114 Chestnut St, Phila.
Chadwick, Jas & Bro, Ltd, 503 Broome St, N Y.
Croll, Albert Irving, 85 Essex St, Boston.
Fox, H C, 45 Strawberry St, Phila.
Home Bleach & Dye Wks, Pawtucket, R I.
Johnston & Farie, 132 South 3d St, Phila.
King, Alex, & Co, 54 Leonard St, N Y.
Lane, J H & Co, 110 Worth St, N Y.
Mitchell, Jas E, & Co, 124 Chestnut St, Phila; 53 Summer St, Boston.
Robbins, Chas B, 56 Reade St, N Y.
Sampson, O H, & Co, Boston, N Y, Phila.
Sawyer, Manning & Co, 86 Franklin St, N Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston.
Taff, Alfred, 69 Mercer St, N Y.
Thompson, Sidney, 66 Grand St, N Y.
Tillinghast, Stiles & Co, 20 Market Sq, Providence, R I
Whiteside, Jas, 96 Spring St, N Y.
Winterbottom, Hyde & Co, 225 Chestnut St, Phila.

Mohair Yarns.

Thompson, Sidney, 66 Grand St, N Y.

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Carbonizers, Wool,

Clegg & Bro, Howard & Berks Sts, Phil, Pa
Hartley, F, Lawrence, Mass.

Cotton Dyers, Bleachers and Finishers.

Boston Finishing Wks, Williamstown, Mass.
Danvers Bleachery & Dye Wks, Peabody, Ma
Fall River Bleachery, Fall River, Mass.
Farwell Bleachery, Lawrence, Mass.
Greene & Daniels Mfg Co, Pawtucket, R I.
Harrison Yarn & Dyeing Co, Pawtucket, R I.
Home Bleach & Dye Wks, Pawtucket, R I.
Lewiston Bichy & Dye Wks, Lewiston, Me.
Lorimer's, The Wm H Sons' Co, Ontario and Lawrence Sts, Phila.
Mason, R D, Co, Pawtucket, R I,
Pawtucket Dyg & Bichg Co, Pawtucket, R I.
Rockland Bleach & Dye Wks, Brooklandville, Baltimore County, Md.
Waltham Bichg & Dye Wks, Waltham, Mass.
Way Dyeing & Finishing Co, Phila.

Dyers, Black on Cotton.

Bishop, Robt, S Boston, Mass.
Mackintosh, D, Sons Co, Holyoke, Mass.

Silk Dyers and Finishers.

American Silk Dyeing & Finishing Co, 52 Howard St, N Y.
Knipscher & Maas, Gun Mill, Paterson, N J.

Yarn Dyers and Bleachers.

Cranston Worsted Mills, Bristol, R I.
Firth & Foster Bros, Kensington, Phila.
Haney, T G, & Co, Jewett City, Ct.
Home Bleach & Dye Wks, Pawtucket, R I.
Mason, R D, & Co, Pawtucket, R I.
Riverside Dye Wks, Riverside, N J.
Warren, W, Thread Wks, Westfield, Mass.
Worcester Bich & Dye Wks, Worcester, Mass.

Dyers and Finishers.

Firth & Foster Bros, Kensington, Phila.
Haney, T G, & Co (hosiery), Jewett City, Ct.
Riverside Dye Wks (hosiery), Riverside, N J.

Finishers of Worsted and Woolen Goods,

Firth & Foster Bros, Kensington, Pa.
Schwarzwaelder, L, 235 New St, Philadelphia

Silk Printers.

American Silk Dyeing & Finishing Co, 52 Howard St, N Y.
Cheney Bros, S Manchester, Ct.

Block Printers.

Lexington Print Works, Canton, Mass.

Nap Finishers.

Boston Finish'g Wks, Williamstown, Mass.
Newburgh Bleachery, Newburgh, N Y.

Refinishing Works.

Anchor Cloth Sponging Wks, 215 Centre St, N Y
Laisser, E, 133 Greene St, N Y.

Turkey Red.

Nashoba Mfg Co, Ayer, Mass.

RAW STOCK.

Cotton.

Abbreviations: b, buyer; br, broker; f, factor; c, commission; d, dealer.

BOSTON.

Barry, Thayer & Co, 32 India St.
Beebe, L & Co, d, 89 State St.
Storrow, Chas & Co, b, 53 State St.
Weld, Stephen M & Co, b, 89 State St.

NEW YORK.

Am Trading Society (ltd), m, 17 William St, NY.
Brady, Thos H, br 216 Church St, N Y.
Capella, H, Rothchild Bldg, N Y.
Latham, Alexander & Co, m, 14 Wall St, N Y.
Meyer, Jos, & Co, imp, 84 Mercer St, N Y.
Meyer, Chas G, br, 43 Exchange Pl, N Y.

PROVIDENCE.

Deming, B H, & Co, br, 3 S Water St,
Hazard, Cotton Co, Jeffrey Hazard, pres, 11 Market Sq.
Reynolds, F W, & Co, 13 So Water St,
Rhodes, J P & co, br.
Wilcox, L Morton & Co, br, 28 No Main St

Bowles, Wm & Sons, Memphis, Tenn.
Gunther W b, 416 W Main St, Louisville, Ky.
Dobbins & Dazey Jr, 30 Cotton Ex, St Louis.
Hill Fontaine & Co, f, c, 116 S Main St, St Louis
Mackintosh, D & Sons Co, Holyoke, Mass.

Carded Cotton.

Mackintosh, D & Sons Co, Holyoke, Mass.

Colored Cotton.

Indian Orchard Co, Indian Orchard, Mass
Mackintosh, D & Sons Co, Holyoke, Mass.

Combed Cotton.

Mackintosh, D & Sons Co, Holyoke, Mass.

Egyptian Cotton.

Blaisdell, Saml, Jr, & Co, Chicopee, Mass.
Paladini, E, & Co, 99 Greene St, N Y.

Cotton Waste.

Adams Bros, 371 Atlantic Ave, Boston.
Barlow, M T, 108 Pocasset St, Fall River, Mass
Bishop, Robt, 8 Boston, Mass.
Coburn, Walter & Co, Lowell, Mass.
Hill & Cutler, 557 Atlantic Ave, Boston.
Hull, Saml E Millbury Mass
Massasoit Mfg Co, Fall River, Mass.
Mayo, A A & Co, Springfield, Mass.
Olmstead & Tuttle Co, Chicopee, Mass.
Riverside Mills, Augusta, Ga.
Remick, T & Co, 489 Atlantic Ave, Boston.
Thorpe, John F, 185 Summer St, Boston, Mass

Peruvian Cotton.

Barry, Thayer & Co, 32 India St, Boston.
Grace, W R & Co, T H Higgins, Agt, 84 W Broadway, New York.
Mackintosh, D & Sons Co, Holyoke, Mass

Substitutes for Rough Peruvian Cotton.

Mackintosh, D & Sons Co, Holyoke, Mass.

Raw Silk.

Arai, R, 46 Howard St, N Y.
Neuburger Silk Co, office, 96 Greene St, N Y.
Zellweger, E & Co, 80 Greene St, N Y.

Silk Waste.

Heath, C A, & Co, 74 Grand St, N Y.
Heath, C A, & Co, Paterson, N J.
Taff, Alfred, 69 Mercer St, N Y.

Australian Wool.

Hartley, Fred, 612 Atlantic Ave, Boston.

Wool.

Abreviations: d, dealer; c, commission; br, broker; p, puller; b, buyer; imp, importer; s, scourer.

BOSTON.

Bienenstok, S & Co, c, 204-210 Essex St.
Bond, G W & Co, b, 202 Federal St.
Brown & Adams, c, 152 Federal St.
Clark, R B, 230 Congress St, c and br.
Cordingly, W S & F, 559 Atlantic Ave.
Cross, Chas F & Co, d, 177 Purchase St
Eisenmann Bros, c, 267 & 269 Congress St.
Hallowell & Donald, c, 556 Atlantic Ave.
Harding & Caverly, c, 301 Congress St.
Hemmenway & Browne, imp, 87 Milk St

Luce & Manning, c, 138 Federal St.

Macnaughtan Co, c, 102 Federal St.
Wright, John G, 612 Atlantic Ave.
Blaisdell, S, Jr, & Co, Chicopee, Mass.

PHILADELPHIA.

Fry, Geo B, & Co, 222 No Front St, Phila.
Halvey, T F, Imp 50 & 52 No. Front St.
Hartley, Fred, 20 Letitia St.
Heston, H B, & Co, d, 118 Chestnut St.
Kitchen, Jas G, & Co, 55 N Front St.
Patton, Geo W, & Co, 38 N Front St.
Webb, Chas J, & Co. 156 N Front St
Wood Bros & Co, imp, 37 N Front St.

NEW YORK.

Basch, Isaac, imp, 155 Duane St.
Grace, W R, & Co, Hanover Sq, N Y.
Macnaughtan Co, 212 Church St.
Mauger & Avery, br, c, 107 Reade St.
Mills & Co, br, 17 Wall St.
Ross, John, & Co, d, 105 Reade St.
Thompson's, Saml, Nephew & Co 142 Duane St,
Graves, Austin C, Albany.
Newman, Charles, & Co, p, Albany.
Schoellkopf & Co, p, Buffalo.
Straws, M, p, E Buffalo.
Hartley, Fred, 5 Mansion House Blk, Troy.

Hair.

Weeks, Chas R & Bro, 74 Murray St, N Y. All kinds for all purposes.

Mohair Dealers.

Cilley, J K, & Co, 101 Gold St, N Y.
Fisher & Lachlan, 42 Letitia St, Phila.

Cut Flocks.

Farnum, Jerome B, 127 Canal St, Providence, R I.

Wool Shoddies.

Basch, Isaac, 155 Duane St, New York.
Claremont Woolen Co, Claremont, N H.
Clegg & Bro, Howard & Berks Sts, Phil Pa.
Collings, Taylor & Co, Cleveland, Ohio.
E, Brookfield Woolen Co, E Brookfield, Mass.
Gray, T H & Co, 154 Federal St, Boston.
Little Falls Extract Co, Little Falls, N Y.
Mulhauser, F, & Co, Cleveland, O.
Slack, W H H, Springfield, Vt.
Smith & cooley, Stafford Springs, Conn.
St Louis Woolen Mills Co, St Louis, Mo.

Wool Waste.

Bliss, Taft & Co, Norwich, Ct.
Dwight, Smith, 463 Atlantic Ave, Boston.
Farnum, Jerome B, 127 Canal St, Providence, R I.
Graves, Frank B, 467 Broadway, Albany, N Y.
Hull, Saml E, 112 Front St, Worcester, Mass.
McGrath, Chas. 127 N Front St, Phila.

Wool Combers.

Hamilton, W R & son, Lawrence, Mass.

Wool Pullers.

Malone, Jas C & Co, 128-44 14th St, Jersey City N J
N. E. Dressed Meat & Wool Co, 20 North St, Boston.
Vanderbeck, A, 404-12 E 45th St, New York N Y

Rags.

Abbreviations: w, woolen; c, cotton.

Keenan, John, 17-35 Richmond St, Boston.
Moynihan, J J, 370 Federal St, Boston.
Priest Bros, 353 Canal St, Providence, R I.
Sargent, Henry, 8 Wash'n Sq, Worcester, Mass
Lewy Bros, 140 Nassau St, N Y.
McNaught, W W, c, w, 467 Atlantic Ave, Boston
Meyer Bros, C & W, 234 236 No Front St, Phil,
Berg, Isidore, 189 So 5th Ave, New York.
Meyers, Edw N & Bro, 141 Duane St, N Y.

Rawlins, S, & Co, 140 Duane St, N Y.

Allen, Wm F, & Co, 132 N Front St, Phila.
Dodgson, H, & Co, c, w, 138 S Water St, Phila.
Kenworthy, B, & Co, 126 N Front St, Phila.
Kenworthy, T, & Bro, 111 Church St, Phila.
Seufeld, David, 1149 N Front St, Phila.
Sullivan, L, & Co, c, w, 612 St John St, Phila

Tailors' Clippings, Seamed Cloth, Etc.

Goldstein, B, 132 Fulton St, Boston.
Levy, Geo A & Co, 20 Lincoln St, Boston
Moss, A, 131 & 133 Fulton St, Boston.

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The advertisers in the following columns should be addressed in care of Textile Mfg. World, or inquiries concerning them may be addressed directly to "Information Department, Textile Mfg. World," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

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COTTON SUPERINTENDENTS.

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679 **Ginghams or white** work in New England mill. Age 36, married. High reputation won by unusually successful career. Nothing less than $2500.

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796 **Spinning or carding or both.** Good man, good record, prefers New England or Middle states, 45 years old, married. Salary $3.00 or so.

811 **All grades, carded, combed** white and colored. Is not afraid of rapid changing over. Good references, good experience.

824 **Good man for overseer** in medium or small mill, or for second hand in any large mill; good at figuring; good references.

826 **Has worked in best New England** mills; as second hand, and capable of taking an overseership in medium or small mill. Age 31.

835 **Overseer or second hand.** Has been second hand in some of the leading corporations in Mass. Salary, lowest, $2.75 per day.

839 **First Class Man, Small Mill.** Has worked on rope, twine, warps and hosiery yarn; white and colored. Age 30; married; salary $2.50.

910 **Is a good carder** on plain, colored and fancy white stock. Age 41. $2.50 and up.

922 **All kinds white or colored** from 1 2 to 14 hank. First-rate experience and references. Age 44, married. Salary $3.50.

931 **Prefers a medium sized mill.** Has had good rooms, and has been 15 years an overseer. Wages $2.50, or so.

COTTON SPINNERS.

555 **Ring spinning**, spooling, warping, twisting, reeling, winding and quilling. Age 38, married.

560 **Warps 4's to 60's.** Fillings, 16's to 20's Ring spinning. $4.00.

569 **Mule or Ring Spinning**; overseer. Has worked in good mills. Good references. Age 30; married; salary $3.00.

660 **Every variety** of yarns known to cotton manufacturing. Mule spinning, but will take rings with mules.

703 **Twisting frames** thoroughly understood by young man wishing employment as overseer or fixer. Single, fair salary.

724 **Ring Spinner** with good experience in mills of high standing. Well recommended. Married, 31 years of age. Fair salary.

735 **Mule or frames.** Age 43, married. 8 years in firstclass Rhode Island corporations. Can take position at once at fair salary.

766 **Overseer of mules and frames** has had experience in hosiery and all kinds of cloth mills, excellent references. 32 years of age, and married. Salary moderate.

COTTON WEAVERS.

176 **South preferred.** Understands fixing a loom, and not afraid to do it. Gets on well with Southern help

429 **Has worked on fine goods** of all kinds as overseer. Salary according to position. Age 28.

500 **Had to leave** the South on account of health. Wants Northern room. Colored work, quills, Jacquard, etc. $3.00. Age 40, unmarried.

539 **Excellent manager** of help. Splendid record of production. Plain and colored work. Twills, ginghams. Age 35, married.

684 **Likes West or South.** All grades of brown goods or fine sheetings. Age 32, married.

711 **Southern, Western States** or Penn. prefered. Has had good experience on all kinds of heavy white or brown goods. Age 40, married. Pay moderate.

726 **Capable overseer** with experience on points, sheetings, twills, and sateens. Married, age 35.

837 **Sheetings, twills, satteens,** fancy goods, and leno. Age 34, married.

938 **Experiencd on Checks,** duck, sheeting, drilling, cottonades, awnings.

940 **Boss Weaver, Designer or Assistant** superintendent. Has worked in some of the best mills, principally on fine goods, plain twill, sateens, fancy harness work, lenos, box work, etc.

1019 **Plain, Satin, Fancy, and Leno,** designer on. Age 28, married. Would also take a position as second hand.

WOOLEN SUPERINTENDENTS.

654 **Cloakings, Cassimeres,** dress goods, flannels. Graduated from the weaving department; age 32, not married. Moderate salary.

760 **Superintendent or Asst. Superintendent** and designer, has worked on fancy cassimers, cheviots, and meltons. Age 31 years, married. Salary moderate.

771 **An excellent Supt.** for any woolen mill needing a man with his experience on cassimeres and dress goods. A good manager of help. Salary moderate.

781 **Thoroughly understands fabrics** Superintendent and designer for many years in England and America, on all kinds of plain and fancy woolens and worsteds. Is married. Prefers to go South or West.

791 **A 1. Ranks high because** of his life long and minute acquaintance with all kinds of worsted yarns. Native of France, 42 years old. Held responsible managing positions abroad. Salary $2000 or will take interest with responsible parties. Investigate.

803 **Is in the first ranks,** very able, good references; experience on all kinds of mens wear and dress goods; 33 years old and married.

809 **American, 24 years of age,** trained in foreign technical schools and mills; is practical in all branches of worsted yarn manufacture and is a good machinist. Desires position as overseer, assistant superintendent or superintendent.

816 **A first class superintendent,** now employed, desires to change Very extended acquaintance with all classes of worsted and woolen cloths. Invites correspondence.

819 **Experienced** on worsted suitings and cloakings, all kinds of face finished goods; piece dyed and wool dyed; cheviots and chinchillas. First class man. Age 37, married.

901 **Worsted superintendent;** long experience as manager of mills in Europe. Can build or repair all machines. Practical in details of both French and English systems.

912 **Superintendent or boss carder,** good references. His forte flannels, dress goods satinetts, union cassimeres. 41, family. Salary moderate.

930 **Asst. Supt, overseer of weaving** and designing. Has worked on all kinds of men's wear, dress goods, kerseys beavers, etc. Age 43; married.

WOOLEN CARDERS.

178 **Is the man** conservative mills are looking for; 38 with a family, desires pleasant town to settle down in. Excellent carder on wool or cotton and shoddy mixed dress goods.

261 **Principally Low Stock.** Age 33, married. $2.75 per day. Does not change frequently.

579 **Carder of the first rank,** has worked in the very best mills, well posted. Strong point; Australian and low stock.

707 **Fine Flannel and Dress Goods** stock understood. A capable man, 35 years old, single. $3.00.

710 **Low stock his strong point,** but has carded all kinds of stock. Age 40; married. Salary $3.00.

738 **Boss Carder.** Knitting mill preferred. References excellent. Age 38 years.

762 **All kinds of goods,** is 50 years of age and married, will go anywhere except to the South, the West, or to Canada. Pay moderate.

776 **Has carded principally** for knitting mills, but also on cassimere and dress goods stock. Is 28 years old, and married. A desirable man. Pay moderate.

777 **Prefers west** of the Alleghany mountains, has worked on nearly all kinds of woolen goods. A trial will prove him a desirable man. Age 50, married.

787 **Capable man.** Carder. 42 years old, married. Good experience and well recommended. Has worked on beavers, cassimeres, dress goods, all kinds of mixes and hosiery.

797 **Will go anywhere,** trained under good men when second hand, experience in good mills since. Strong acquaintance with flannels, shawls and cassimeres. Age 35, married, salary $3.00.

833 **Carded fine flannel and ladies** suiting stock. Prefers Mass., R. I., or Conn., to work in. Is 27 years old and married; salary $3.00.

836 **Strong point, hosiery,** but has also carded extensively for dress goods, flannels, tweeds, etc. Age 35. Salary moderate.

913 **First class woolen carder** hosiery, dress goods, overcoatings, cloakings, cassimeres, (all wool and union), kerseys, meltons, etc. 35, married. $3.00 and up.

WOOLEN CARDERS.

918 **Carder on tricots, serges,** coatings and blankets. Age 31; married. Wages moderate.

923 **Knitting mill his forte** either carding or spinning department or both, or could manage a mill; 28 years old, married. Wages $3.00

932 **Carder and spinner** in 3 to 5 set mill. Has worked on fine dress goods and cassimere stock. Age 29; married Wages $3.00, or so

WOOLEN SPINNERS.

222 **First Class Overseer,** has worked on all classes of goods and in some of the most successful mills. Age 30; married

685 **Fancy Yarns** as well as all grades of woolen. Just out of position through stoppage of mill. Age 37, married.

697 **Smart young man.** Good mule fixer, and had charge. Age 24, married. $2.50 per day All grades of stock.

747 **Highest references** as a boss spinner for 12 years. Has worked on all kinds of goods.

780 **Wide experience** as boss spinner on variety of stocks: Johnson & Bassett, Davis & Furber, Woonsocket Mule, and the Wright Spinner. 28 years old and single; best of references. Will not go West or South. Salary moderate.

941 **A Very Efficient Man.** Used to most every class of woolen goods; age 28, married. Salary moderate.

WOOLEN WEAVERS.

104 **American.** Practical and hard working. Good knowledge of designing, gets along well with help, understands looms thoroughly. Fancy cassimeres, shawls, dress goods.

176 **American Boss Weaver;** good manager of help. Has worked in cotton, woolen and jute mills. In cotton on 3 harness drill, plain duck, osnaburgs, sheetings, shirtings, etc.; in woolen, 5 harness Ky. jeans, linsys, etc.; in jute, on bagging; age 40: married; temperate, with good references. Salary moderate.

614 **Boss weaver and designer** has had a wide experience on cassimeres, dress goods, worsteds, casket cloths, beavers, flannels, blankets, doeskins, satinets and jeans. 45 and married. Salary $3 or so.

702 **Reliable overseer** of weaving. Son is loom fixer. Worsteds, shawls, flannels, all kinds of woolen goods, ginghams. Good references. Age 50, married.

741 **Woolen and Worsted Weaver** on fancy worsted, cassimere and dress goods. Good references.

920 **Worked in some of the best N. E.** mills. Dress goods, unions, cassimeres, worsteds and cheviots. 28, and married. $3.00 or so.

1004 **Now in the West,** good weaver. Experienced also in the best Eastern mills. Has worked on cassimeres, meltons, cheviots, beavers, cloakings, worsteds. Is 38 and married.

1008 **Wants boss job in flannel mill.** Northern New England preferred, also a good man for dresser or fixer, has worked on flannels, serges, cheviots, fancy dress goods. Is 34, married.

1020 **Woolen weaver, first class man.** Experienced on cassimeres, dress goods, shawls, flannels, etc. Good references.

WOOLEN FINISHERS.

193 **Woolen Finisher of first rank,** all classes of woolens from loom to case. Age 44; married.

358 **Heavy overcoatings,** beavers, chinchillas. Never held overseer's position, but second hand in fine mills. Would start low.

783 **Competent overseer** of wet and dry finishing. 46 years old, married. Has first-class recommendations. Many years experience on all classes of goods. Wishes to remain in New England. Fair salary.

828 **Desires a position in finishing** room; as second hand preferred. Is bright, intelligent, and capable of an overseer's position, acquainted with flannels, fancy suitings, cassimeres, overcoatings, carriage cloth, fancy mixed beavers. Age 25.

832 **A young finisher** desires a position as overseer. Has worked on all wool cassimeres, suitings, dress goods and cloakings, worsted suitings, and cotton and worsteds, union cassimeres and low grade shoddy. Age 28; married. Salary $8.00 or so.

905 **Chinchillas,** Wants position in charge of finishing. Has knowledge of about 150 styles in this line. Age 32; married. Pay moderate.

1007 **Dress goods and fine meltons** prefered, but has worked on all kinds woolens. N. Y. or N. E. states. Age 22, salary moderate

DYERS.

696 **Wool and Worsted,** piece dyes, and cotton yarns. Age 25, single. $3.00. Excellent references.

728 **Woolen dyer.** 27 years old, married, and has had a very wide experience on all classes of woolen goods. Has had experience in carpet mills and knitting mills Expects good wages. Can furnish high references.

742 **Cotton, Wool and Worsted Yarns** all colors. First class references. Age 43, married. Salary $55 per week.

748 **Carpet yarns, hosiery** and felts. Aged 29, Married. No objections to going out of New England.

754 **Raw cotton and wool,** yarns and woolens. Has worked ten years for one company. Wages $3.00.

765 **All kinds of cotton goods** either yarns or piece, can take a position at short notice. A good overseer, age 50, married.

774 **Worsted yarns, blue vats** and woolen piece goods his strong point. Wants position as overseer. Age 34, four years experience in Rockville, Conn.

784 **Has good references.** Many years experience on dress goods, indigo blue, raw wool, yarn and piece dyeing. Married. Prefers eastern and middle states. Moderate salary.

793 **Boss dyer or second hand** has had experience in high standing mills on cotton and woolen dress goods. Age 32, salary $3.00 or so,

DYERS.

794 **All classes** of knit goods, and no better man for the work. Age 40, when a man's at his best. Married.

795 **Ten years experience,** strong point. skein, warp, hosiery yarns and long chain. Laboratory experience extensively on raw stock; 30 years old.

798 **Now employed,** giving good satisfaction; Age 36, married, experienced on wool, woolen and worsted yarns and piece goods, cotton and cotton yarns.

804 **All kinds of fancy woolen dyeing,** woolen and worsted skein, and piece; high or low grades, and raw stock.

806 **Has colored hosiery,** woolen yarn, piece goods, slubbing, raw stock and Indigo vats with success. Salary moderate.

808 **Cheviots, demins, cottonades,** checks, ginghams, shirtings, tickings; is 39 years old and married.

818 **All wool and merino hosiery,** carpet yarns, raw wool, rags, shoddy, and mixed goods. Age 30; married. Salary $3.00 or so.

831 **Experienced on woolen dress** goods and fancy cassimeres. Age 34. Salary $2.50 per day, or so.

904 **Worsteds, Meltons,** mixtures, and cassimeres. Is a good stayer. Married; with a family; age 44. Wages $2.50 or $3.00.

928 **Foreman dyer and finisher** of knit goods. Very extended experience on all kinds of cotton, wool, and mixed goods, in hosiery, underwear, and overshirts.

937 **Boss Dyer of the very First** Rank Strong points; cotton, woolen, and merino yarns, raw cotton and wool, all kinds of hosiery.

939 **Yarns, Piece Goods and Hosiery.** First class man in every respect. Age 37.

1013 **Dyer on wool yarn and piece.** Is 43 and married. Has had 25 years experience in some of the principal woolen mills in Germany.

1022 **Second hand** in dye house. On knit goods.

DESIGNERS.

197 **All kinds of goods.** Age 34, unmarried. Past ten years has had great experience.

690 **Designer.** Fancy worsteds, cassimeres. Would also like the position of assistant superintendent. Refers to any firm ever worked for. $1200 or upwards.

760 **Desires advancement** in responsibility. Superintendent or Asst. superintendent and designer. Salary moderate; experience on fancy cassimers, cheviots and meltons. 31 and married.

755 **Young and Ambitious,** has worked on fancy cassimeres and cheviots, but principally worsteds. Would take a position as designer.

825 **First-class experience, English** mills, 4 years as assistant designer, and 3 years as designer and assistant manager. Fancy worsteds, woolens, serges, etc. Young man.

834 **Could introduce some good** things he claims, either in fancies, coatings, vicunas, Llamas, etc. Practical training acquired in England.

KNITTERS.

767 **Overseer of knitting,** has had a large experience on hosiery, will go any where. Pay moderate. Age 32, and married.

773 **An experience** on all kinds of underwear and plush. A good man, 45 years old and married. Overseer's position anywhere except the South.

673 **Superintendent of woolen hosiery.** Practical knitter and dyer. Large mill wanted. $4.00 per day.

721 **Superintendent** with good practical experience on fine and coarse seamless hosiery and mittens, unmarried, age 23 years. Pay $3.50 per day.

723 **Knitter or fixer,** has worked on stockinets, jersey cloth, rubber linings and fancy goods. Age 23, $15.00 or $18.00 per week.

743 **A 1 First Class** superintendent, capable of handling any size mill and understands thoroughly all classes of goods. Highest references. Age 34, married. Salary $2100.

769 **Capable manager** for any underwear mill wants a more responsible position, would especially desire to help start up a mill on ribbed goods.

772 **Boss knitter,** has worked as overseer in northern New York mills, experiance on wool and cotton, heavy and light underwear. 31 years old, married. Pay very moderate.

815 **Superintendent** rib, circular, or fashioned. Underwear and hosiery, cotton, merino and worsted. A good man. Age 45.

830 **All classes cotton and woolen** hosiery. 28, and married. Salary $3.00 per day, or so,

915 **Wants position as boss knitter** or superintendent in hosiery mill. 21 years old, unmarried, salary $3.00 and up.

MISCELLANEOUS.

717 **Overseer on Noble combs.** As such can give satisfaction. Has had extensive experience on all grades carpet wools, shades and fancy mixes. Unemployed as mill shut down. Age 35. $3.00.

737 **Twisting Reeling and** Winding, either ring or flyer frames sewing thread, carpet warp, cotton flax or hemp.

782 **Temperate and steady.** Dresser tender. 38 years old, single. Many years experience on worsted coatings, cassimeres and dress goods. Good references; moderate salary.

800 **Office or cloth room,** thoroughly understands the cotton mill from this end. Desires pay master's or some like position; 26 years old; married, salary moderate.

838 **Pattern Weaver.** Woolen, worsted and silk dress goods, always on Knowles looms.

927 **Boss Dresser Tender.** Five years overseer on stock for cassimere, flannels, worsteds, kerseys, beavers, dress goods and all other kinds of woolens.

943 **Dresser;** has dressed in the best of fancy mills and is A1. Out of employment because of the failure of his mill, can go at once and is a desireable man to have.

1005 **Boss wool sorter, worsted** prefered. Has worked in best New England mills. Can take position at once.

MISCELLANEOUS.

758 **Gingham Superintendent** with experience on fine dress goods and shirtings. Age 38, married, and a desirable man.

840 **Beaming or Charge of Beaming.** Has worked on ginghams, tickings, shirtings and dress goods. Age 29; married; salary as beamer $2.50; in charge $2.75.

900 **Cotton:** long and short skein, hosiery piece dyeing, and raw stock; has worked in good mills. 33 years old; married $3.50 or so per day.

805 **Spinning, spooling, slashing,** etc. Is young and capable, comes from a race of first class cotton men. Would also take a position as superintendent of yarn mill; salary moderate.

817 **Warp yarn and carpet yarns.** Nos. 5 to 18. Desires position as boss ring spinner, twister, spooler, etc. Age 24, unmarried.

1003 **A1 Spinner, Mules and Frames.** 36 years old. Has practical experience in spooling, warping and dressing.

1018 **Overseer of Mason mules** and frames. Experience in some of the very best mills. Age 39, married. Salary moderate.

807 **Second hand,** warping and spooling also in dressing; prints, shirting, sheeting, colored work.

820 **Print works or bleachery,** wants position as assistant manager of Has had excellent experience.

925 **Extensive knowledge** in cotton carding, excellent references.

926 **Capable, bright, enterprising;** has had first-class experience as a carder; age 32, maried; salary moderate.

725 **Ring spinning overseer** with experience on a wide range of goods. Age 28 and married. Salary moderate.

684 **On all kinds** of heavy or light, 2 to 5 harness goods, Reliable man; 52, married, salary about $3.00.

1001 **Has Carded** for ginghams, sheetings, checks, prints, etc., and is first class. Age 34, married. Wages $2.50 and up.

1006 **Thread, hosiery yarns,** combed and carded. Has never held overseership but second hand in first class N. E. mills. Age 40, married.

1009 **Carded for the finest threads** for fancy goods, prints and sheetings. Prefers N. E., good references.

1011 **Southern man,** carding or carder and spinner in small mill.

694 **Mule Spinner.** Age 41, married. Large or small room. Mason or Parr mules, any number of yarn.

902 **Fall River man;** 33 years old; married, wants position as overseer of mules. Number of years' experience as second hand in first class mills.

907 **Ring Spinning; Mule Spinning.** On the one from 4s to 150s, on the other from 4s to 120s. Good references, experience in best N. E. mills. 34; married.

876 **Superintendent and Manager.** Experienced on blankets, flannels dress goods, wool and worsted. Has had thirty years' experience. Can give best of references. Unmarried. Salary and part interest can be arranged with proper parties. Has a knowledge of trade, having sold goods direct for the mill.

Situation Wanted. By a man of twelve years' experience as foreman of fixing, running circular and flat knitting machines on stockinet, elder down, rubber linings, warp machines and silk glove fabrics, and also experienced in the manufacture of dress and upholstery trimmings. P. 122

Finisher or second hand wants position, familiar with all kinds of woolen and worsted goods, Edward Wattslong, 11 Otis St. Boston care Chas. Wattslong.

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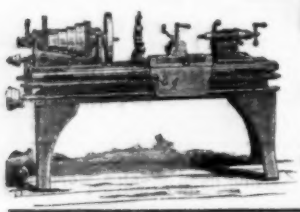

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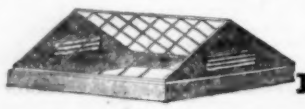

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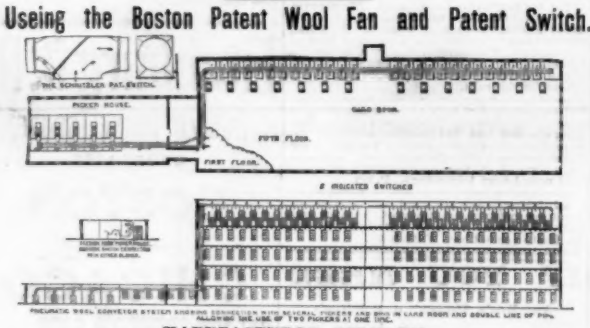

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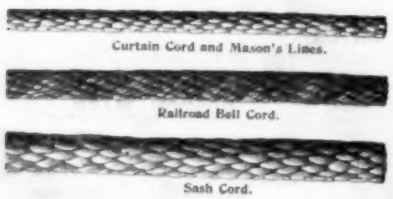

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MILL NEWS.

See also Page 20.

New Mills.

Cotton.

—ALABAMA, Opelika. There is a report that a stock company has been formed for the purpose of trying to raise sufficient funds to erect a cotton mill at this place. No names have been given out.

—FLORIDA, Jacksonville. There is talk of a cotton mill at this place. A party having a large plant is seeking for a favorable location in Florida, and it is thought that Jacksonville will prove the most suitable place.

—GEORGIA, Augusta. A mill to be known as the Dunkirk Mfg. Co. will be established near Graniteville. It will be a 15,000 spindle mill with a capital of $200,000, and will manufacture a fine grade of goods. G. D. Mims of Edgefield is interested in the enterprise.

—GEORGIA, Macon. There is a project on foot at this place for the establishment of a cotton mill. Mr. George A. Smith is corresponding with a company having $500,000 capital.

—MISSOURI, St. Louis. The Mound City Duck & Rubber Co. has been incorporated. Capital $25,000. The incorporators are William Rowe, Julius Gaitzch and Aug. Peitt.

—NORTH CAROLINA, Charlotte. It is rumored that the Lincoln Paper Mill may be sold to Mr. D. E. Rhyne who will convert it into a cotton mill.

—NORTH CAROLINA, Durham. The stockholders of the Pearl Cotton Mill have decided to increase their capital stock from $100,000 to $175,000, and to complete the mill. The officers are as follows: Geo. W. Watts, president; B. N. Duke, vice president; W. H. Branson, secretary and treasurer.

—NORTH CAROLINA, Lumberton. There is a project on foot at this place for the organization of a cotton mill company. No names have been given out as yet.

—NORTH CAROLINA, Raleigh. Great Falls water power, six miles from Weldon, has been sold to Northern capitalists, and it is rumored that two large cotton mills will be erected.

—PENNSYLVANIA, Brushton. It is reported that there are prospects of a cotton factory being established at this place. A party of eastern capitalists have visited Brushton and found it well adapted to such an enterprise as they wished to establish.

—QUEBEC, Montmorency. There is to be a mill started at this place on cotton waste yarns, running on numbers from one half hank up to 10's and 12's. Greenwood Dearden is a party interested.

—SOUTH CAROLINA, Seneca City. The Courtney Mfg. Co., now building a new mill will increase its capital stock from $150,000 to $200,000.

—SOUTH CAROLINA, Spartanburg. It is reported that a company is to be organized at this place for the erection of a new cotton mill. C. E. Fleming is interested.

—TEXAS, Fort Worth. There are prospects for the erection of a cotton mill at this place. The plans are that Boston capitalists and local capitalists will unite to raise the capital stock. Mr. J. R. Lord is interested in the project.

—TEXAS, Gause. There is talk of a cotton rope factory being started at this place.

Woolen.

—ILLINOIS, East St. Louis. J. Henon and S. C. Coburn, of Schenectady, have been at this place looking for a site for a woolen mill.

—PENNSYLVANIA, Hallstead. A charter will be applied for to incorporate the Hallstead Textile & Electric Light Co. They will manufacture silk ribbon, woolen goods and electric lights. Mr. John M. Mears of Scranton is president.

—UTAH, Salt Lake City. Parties from Indiana are desirous of locating a woolen mill at this place, and wish to receive a proposition from the people of Salt Lake City. They will have a two-set mill so arranged that they can increase with the increase of business. W. E. Hubbard is in correspondence with the parties.

—VIRGINIA, Staunton. There is a project on foot at this place for the erection of a new woolen mill. A one-set plant is proposed, which will cost about $7000. B. F. Williams, of Winchester, is doing active work to secure its promotion.

Knit.

—ARKANSAS, Little Rock. It is reported that Simon Baer & Co., of Cincinnati contemplate establishing a hosiery mill at this place.

—LOUISIANA, New Orleans. The Orleans Yarn & Hosiery Mills, Ltd., capital stock $100,000 has been granted a charter. They will manufacture woolen and cotton yarns and hosiery. The officers are Simon Mayer, president; Isidor Mayer of Clinton, vice president. The directors are Simon Mayer, Isidor Mayer and Eugene T. Worms.

—NEW YORK, Mechanicsville. Articles of incorporation have been filed by the Empire State Knitting Co. at this place. Capital stock $80,000.

—*NEW YORK, New York. We are further informed in regard to the Prospect Knitting Mills, which we reported last week, that they will manufacture sweaters only, on Lamb flat ribbed machines, and will also use six German flat ribbed machines. They will sell direct and buy yarns. Their plant is located at 408 410 Berry Street, Brooklyn, and will be run by electricity.

—PENNSYLVANIA, Philadelphia. Albert Martin, 1132 Race St., is just starting up a new mill for the manufacture of fleece-lined and plain underwear. He will employ about fifty hands we understand.

—RHODE ISLAND, Providence. A new company has been started at this place for the manufacture of ladies' hose. It will be known as the Phœnix Hosiery Mills Co. They are re-modeling the old slaughter house on West Friendship Street. The officers of the company are Joshua Perkins, of Pascong, president; F. W. Tillinghast, secretary and treasurer; P. S. Perkins, superintendent.

—*VIRGINIA, Newport News. The knitting factory, which has been talked of for some time at this place, is now assured. A site has been donated by the Old Dominion Land Co., and money amounting to $6000 by the citizens of Newport News. Contracts for the erection of the plant have been signed and work will begin at once. Messrs. Theo. Livesey, Robert P. Orr and Elias Peyser are in charge.

—WISCONSIN, Marinette. A new industry has been started at this place for the manufacture of all kinds of knit underwear. It will be known as the Marinette Knitting Works, Rasmus Peterson and Johannes Peterson are interested.

Silk.

—ARKANSAS, East Greenville. S. Schantz and F. J. Barte of Allentown are starting a silk ribbon mill at this place.

—*CONNECTICUT, New London. The Incorporated New London Wash Silk Co. recently organized, have informed us they started the foundation of their new mill January 10, and will put in all new machinery. They will manufacture wash silks, embroideries and knitting silks of all kinds, braids and hosiery, cotton and silk. The mill will be operated by steam.

Miscellaneous.

—MAINE, Portland. The Hodges Fibre & Carpet Co., has been incorporated. They will manufacture carpets, mats, curtains, etc. They have on authorized capital of $1,000,000.

—NEW JERSEY, Lodi. It is rumored that a large dye works will soon be erected on the site of the bleachery at this place, which we reported was burned last July.

—*NORTH CAROLINA, Charlotte. In regard to the Gold Crown Dye Works company, which we recently reported had been formed, we are officially informed that their building is now completed and ready for occupancy.

—PENNSYLVANIA, East Greenville. A new silk mill has been started at this place, called the East Greenville Ribbon Mfg. Co. The necessary machinery has already been purchased. They will run on a small scale at first.

—*PENNSYLVANIA, Pottstown. The citizens of Pottsdown have subscribed $10,000 and have secured the large textile mill which will be removed from Philadelphia, as we reported two weeks ago. The mill will occupy two acres, will cost about $100,000, and will contain 265 looms at the start.

—PENNSYLVANIA, Royersford. It is reported that a party from Philadelphia has leased the F. S. Stauffer hosiery mill, and will conduct a dyeing establishment, employing twenty-five hands.

—SOUTH CAROLINA, Charlestown. Efforts are being made to construct a plant at this place for the manufacture of lace, fancy goods, worsteds and silks. No names have been reported.

Enlargements and Improvements.

Cotton.

—ALABAMA, Montgomery. The Montgomery Cotton Mills will add 1000 spindles and 4 new looms to their plant. They are also putting in new spoolers, draw frames, automatic feeders, electric lights and sprinklers.

—CONNECTICUT, Middletown. The Russell Mfg. Co. are making improvements at their factory at Higganum. The old part of the mill will be shut down to put in new floors and add new machinery.

—GEORGIA, Newman. The Newman Cotton Mills contemplate putting in new looms.

—MASSACHUSETTS, Fall River. Extensive repairs have for some time past been in progress at the Borden City Mill No. 2. Within nine months 200 looms have been replaced by new, and now the last of 50 new Pettee cards are being put in. New pickers are also being erected.

—MASSACHUSETTS, Lowell. Twenty new looms are being placed in the Prescott mills.

—NORTH CAROLINA, Harden. The Harden Mfg. Co. contemplate putting in some additional twister spindles and also a warping machine.

—NORTH CAROLINA, Raleigh. The president of the Caraleigh Cotton Mills states that this year they will put in 5000 more spindles and 100 more looms.

—NORTH CAROLINA, Randleman. The Naomi Falls Mfg. Co. will put in 2000 new spindles in its mill.

—QUEBEC, Montreal. The Merchants Mfg. Co. have built an addition to their plant 100 by 300 feet. They have put in 300 new looms and a large compound engine. When all is in readiness they expect to employ over 600 hands.

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